EDIBLE BEAUTY
AUSTRALIA

# Your inside-out guide to a healthy pregnancy and luminous skin

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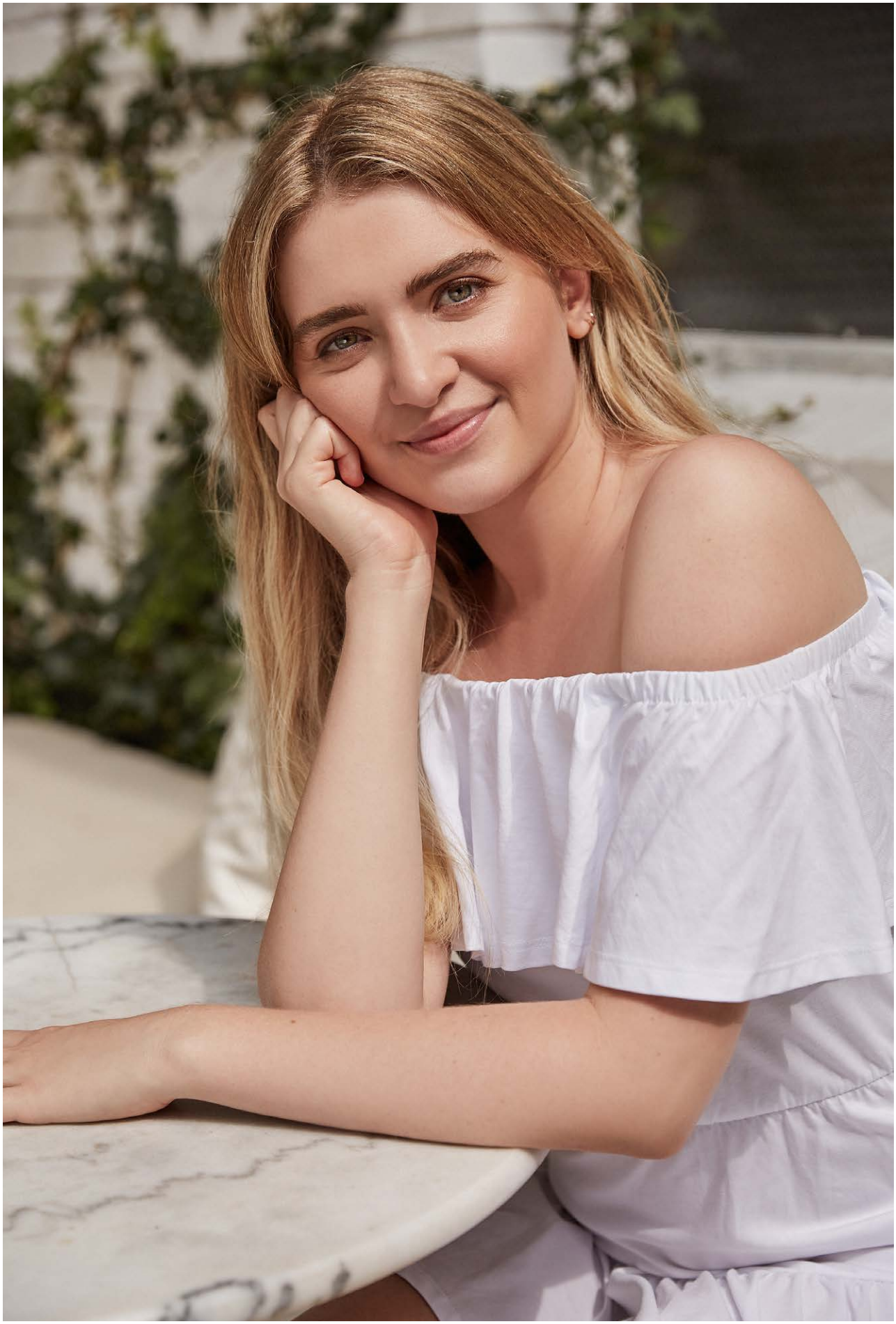

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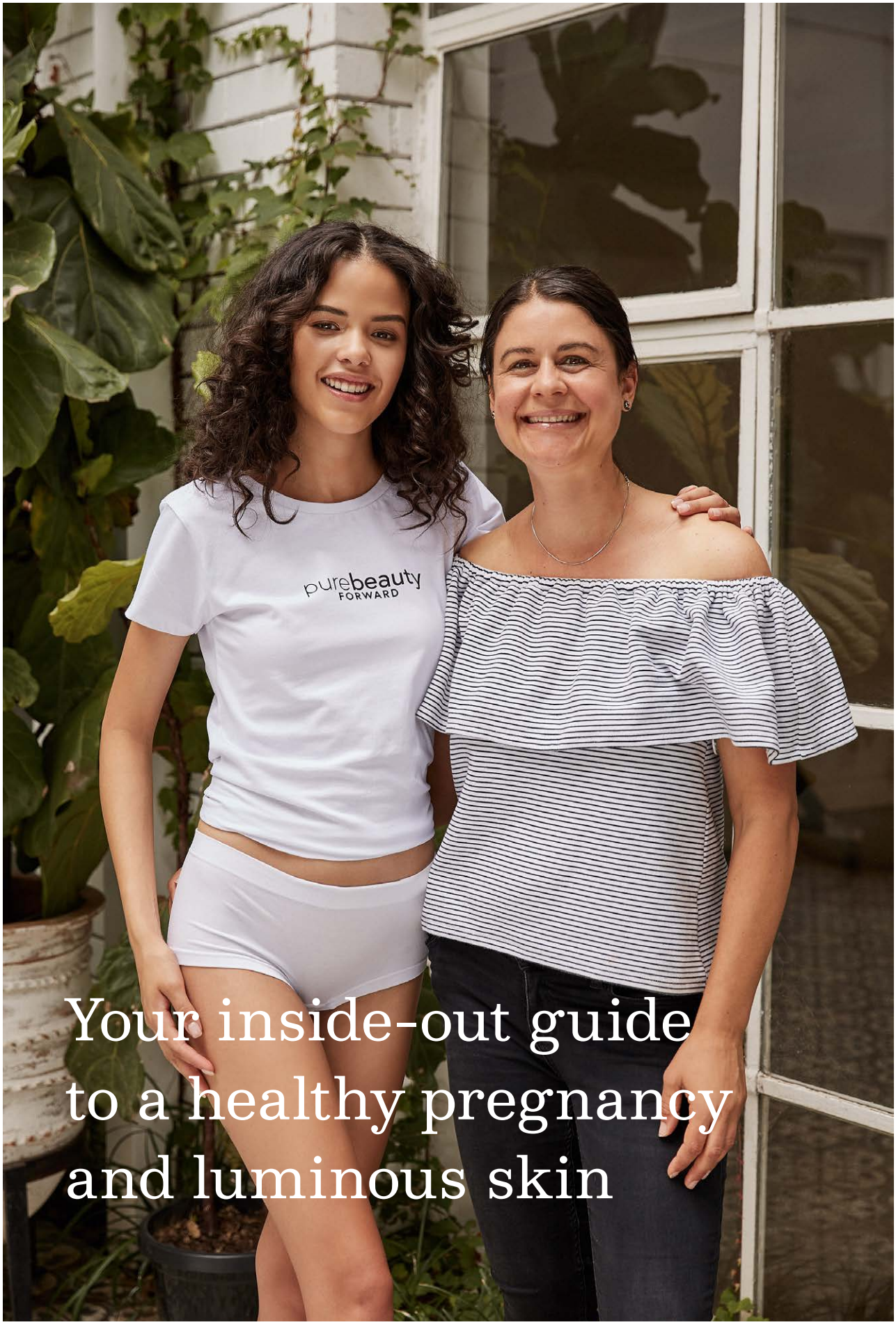



# Your inside-out guide to a healthy pregnancy and luminous skin

# Introduction

**Planning pregnancy is one of the most magical and fun times in our lives, however can often be fraught with stress, exhaustion and uncertainty.**

This book has been written as a no-nonsense guide to optimising your chances of a healthy natural pregnancy based on effective naturopathic principles, which also result in luminous glowing skin. I am so passionate to share with you the information that I have been able to gather about what makes a successful pregnancy and baby from the support of many of my clients and some of their concerns and questions along the way to getting pregnant along with my own pregnancy. It is designed to provide you and your partner with a resource to create more fertile bodies through your food and lifestyle choices

Whilst there are a myriad of approaches and expert opinions out there on the best preconception plan, the information within has been shown clinically effective in achieving successful pregnancies and healthy babies. As a bonus of following this protocol, you will also be taking steps to eating to for beauty with the reward of beautiful glowing and vital skin.

# About Anna Mitsios

**My love of herbal and natural ingredients provided her with a vision to create a luxurious botanical product range to promote beauty both inside and out.**

As a naturopath and nutritionist, I am a strong believer of the incredible power of herbs and natural foods to transform, nourish and revitalise our lives. My focus on fertility, hormonal imbalances and children's health in my clinical practice provided a strong impetus for me to spread the awareness of the importance of using natural products to prevent exposure to hormone disrupting toxins, improve fertility and to promote vibrance and vitality.

Although my career began in the corporate sector, my career change was sparked by my own health journey, following a diagnosis of Type 1 diabetes at 18 years of age. This diagnosis triggered my intense study of botanicals and nutrition to manage the auto-immune condition and to assist others in attaining optimal health.

I have been involved in the pursuit of herbal medicine and nutrition for over 15 years, with a focus on fertility, women's and children's health. My naturopathy career has included working as a naturopath within a reputable natural fertility clinic in Sydney, within a pharmacy and health food store, running my own naturopathy practice and most recently founding Edible Beauty.

# What is natural preconception care?

**Natural fertility involves both male and female taking steps to ensure that the most healthy version of themselves is being put forward in order to create an optimal pregnancy and a beautiful and vital new being. This involves bringing your body back to a natural and balanced state, where your ability to have children is abundant.**

This program addresses changes in lifestyle, diet and environmental factors to promote hormonal balance, increase vitality, reduce oxidative stress and provide the best building blocks for the entry of a new being into this world. As a bonus, these changes result in luminous natural skin and beauty, including hydrated and glowing skin, weight loss and improved mood and energy.

At present, it is estimated that 1 in 6 couples are infertile. These statistics are staggering and unfortunately on the rise each year. It is thought that many of these issues are related to our Western lifestyle. Environmental factors such as pollution, toxic farming methods, chemicals, toxic personal products, antibiotic use, radiation and heavy metals significantly impact hormone and fertility levels. When this is combined with a poor diet, a lack of nutrient levels in our soil, our sedentary lifestyle and high intake of stimulants in our diets, combined with the stress of our modern lifestyle, it is no wonder that our fertility levels have deteriorated. By addressing these factors, we can optimise the health of you as prospective parents before conception takes place thereby giving your child the best chance of health and head start to life.

Many people ask if they can fast track this program so that they do not have to do it for three months. I always answer this question by explaining the life cycle of both sperm and eggs. Sperm can take 116 days to generate and during this time are easily susceptible to damage. Similarly, the egg is vulnerable during maturation for around 100 days leading up to ovulation. This provides us with the perfect window of time and opportunity to be able to successfully impact the health of both ova and sperm. As soon as the egg and sperm unite an irreversible blueprint is formed for the development of a new being. This blueprint is reflective of the health and toxicity levels of the egg and sperm during the four months prior to conception. Participating the program for more than four months will work even better to enhance your chances of a health pregnancy and baby.

This involves bringing your body back to a natural and balanced state, where your ability to have children is abundant.

# Why follow a preconception health program?

**Many people question why they may need to adhere to any changes in their diet and lifestyle given that they have seen their friends and family conceive with very little effort. Increasing evidence is providing several convincing reasons for you to take on a three-month natural fertility boosting program:**

— Improve your rates of fertility success: A recent large study provides evidence of the impact of changing diet and lifestyle in improving fertility success. For eight years, the Harvard study followed 17,544 married nurses without any history of infertility as they tried to become or became pregnant. The research found that by changing five or more aspects of their diet (and exercise) habits, women with irregular or absent ovulation, which is responsible for 18 to 30% of infertility cases, reduced their risk of infertility by 80%.

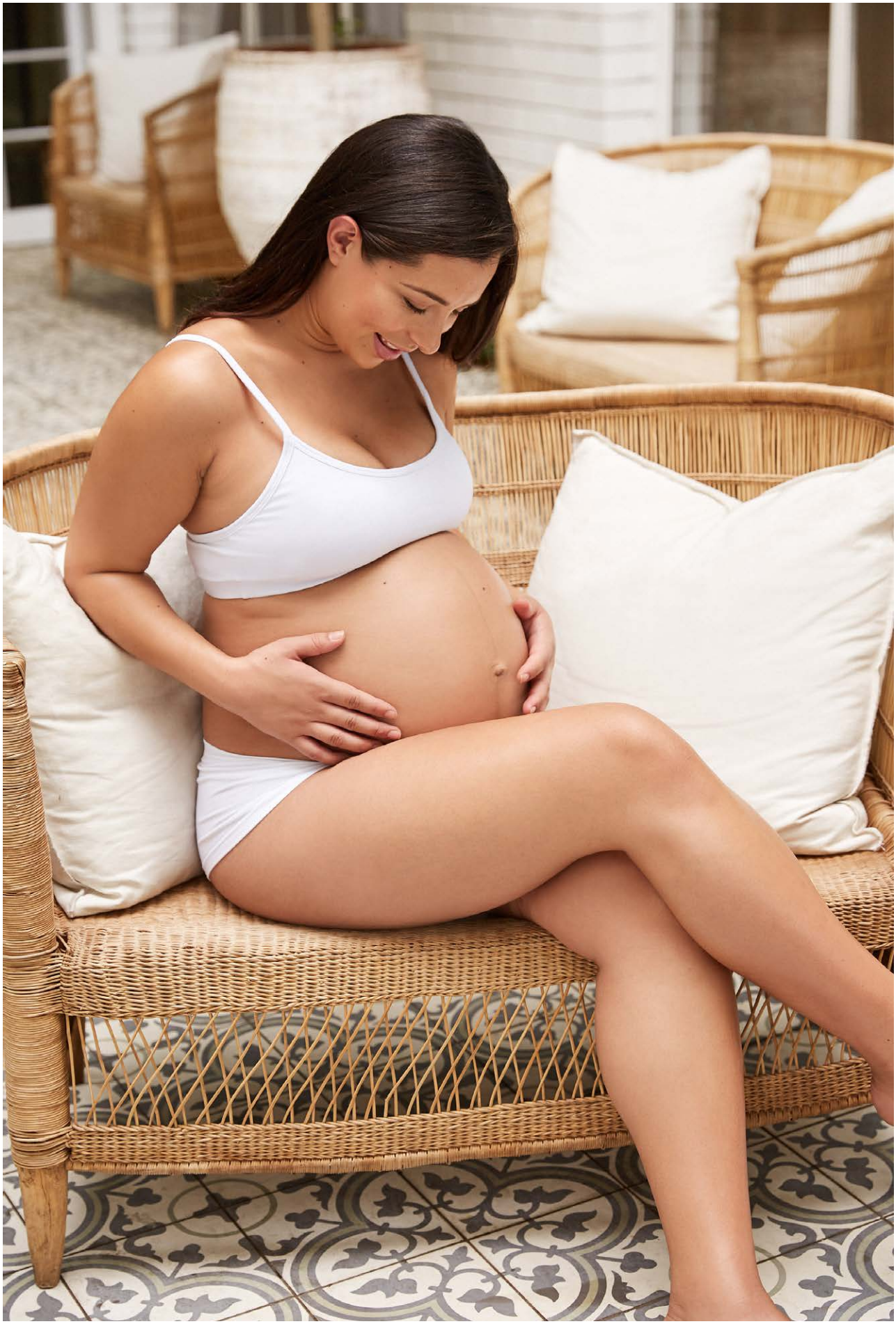
— Transfer healthy microbiome to your newborn: Mounting evidence is showing the importance of the gut microbiome in dictating our health and predisposition towards inflammation and disease – from conditions such a autism, to auto-immune disease and diabetes. A baby "inherits" the microbiome from its mother with the groundwork for each person's gut flora being laid from birth. This makes it critical to address your gut health before, during, and after pregnancy. By consciously making changes to your health before conception, you can decrease the risk of passing on the predisposition to allergies, genetic, developmental and learning disorders, diabetes and obesity.

— Reduce risk of developmental defects: Smoking, alcohol and drugs have all been shown to impact the development of your baby and even increase the likelihood of miscarriage, stillbirth and low birth weight. By taking measures to reduce your exposure to both external and internal toxin exposure you can ensure your baby is given the wonderful head start that it deserves.

— Look past the age factor: Whilst it has been previously thought that women were given all of their eggs from birth, research is now showing that we can not only impact the quality of our eggs but we also have some control over the development of new eggs which is ground breaking for natural fertility.

— Support assisted fertilisation methods: Whilst IVF can be instrumental in assisting fertility where it appears difficult or unlikely, making changes to our diet and lifestyle can not only improve sperm and egg quality but can improve the lining of the uterus and enhance nourishment provided to your baby, providing for a more healthy and comfortable environment for your bubba in the womb. It can also improve the success rates of assisted fertility methods.

— Improve your health and vitality: Making changes to your diet and lifestyle improve your overall health and vitality, increase your mood and energy and reduce your risk of health conditions. Not only does this create a wonderful foundation for the introduction a new family member, regardless of whether you are having a baby, it ensures you are the best and most vital version of yourself. Both men and women who participate in this program report feeling happier, energised and also sport a new-found glow.



# Section One — “Inside Out” essentials for a healthy bubba and glowing skin

Detoxing sounds like a bit of a chore and is probably not the quite word for preparing for preconception which should be a happy and exciting period of your life. I like to call it “Eating for Beauty and Bubba” as it actually is just a healthy way of eating for you, your beauty and your unborn baby.

One of the quickest and most effective ways at getting both male and female ready for conception is cleansing the mind and body, both inside and out. This ensures that you are able to rebalance your hormones, improve your gut health and microbiome and create a lush womb ready to provide a cosy and safe environment whilst at the same time providing the most optimal building blocks (sperm and egg) for a beautiful baby.

This is the 101 to a healthy pregnancy as it ensures that increased toxicity which may be creating imbalanced hormones, poor liver metabolism, decreased circulation, inflammation, poor cellular function, a compromised microbiome and decreased vitamin and mineral absorption have been addressed. Cleansing therefore is not only important but quite essential for a healthy pregnancy and ultimately a healthy baby. This guide addresses both the inside and outside in achieving a healthy pregnancy. Given our skin absorbs 60% of what we put on it, it makes sense that we treat each with equal importance.

One of the quickest and most effective ways at getting both male and female ready for conception is cleansing the mind and body, both inside and out.

# Inside tips

## 1. Go Organic

### Why?

— **More nutrients.** There is substantial evidence indicating that organic food has a significantly higher level of antioxidants than conventional produce. After reviewing 343 studies on 'the compositional differences between organic and conventional crops,' a Newcastle University study found that switching to organic fruit, vegetables, and cereal would provide additional antioxidants equivalent to eating between 1–2 extra portions of fruit and vegetables a day[1]. The study found that concentrations of antioxidants such as polyphenolics were between 18-69% higher in organically-grown crops. Substantially lower concentrations of a range of the toxic heavy metal cadmium were also detected in organic crops (on average 48% lower). A similar study found that the amounts of omega-3 fatty acids in organic meat and dairy products are consistently about twice as abundant in organic as opposed to non-organic. Organic milk products were found to have an average 56% more and organic meats approximately 47% more omega-3's[2].

— **Hormone disruption.** Chemicals used in pesticides and fertilisers acts as endocrine disruptors and mimic human hormones or otherwise interfere with hormone-controlled systems, which can block (or put into overdrive) a range of biological processes. Throughout a lifetime, endocrine-disrupting chemicals can damage the reproductive system in a number of ways. Some kill or damage cells; if these are sperm cells or oocytes, infertility can result. Others alter DNA structure, causing gene mutations that may result in birth defects or an inability to conceive. There is a growing body of scientific evidence linking chemicals to many reproductive health harms. Research is particularly strong linking pesticide exposure to reduced sperm count and quality, early puberty in girls, birth defects, miscarriage and stillbirth. In the first study of its kind, scientists at Harvard found that men who ate food with more pesticide residue had lower sperm count and fewer normal sperm[3]. Exposure to the herbicide atrazine has been linked to menstrual disorders, low-birth weight babies and birth defects[4].

### How?

— Choose organic fruit and vegetables along with meat and protein wherever possible.

— Find local farmer markets that can speak to you about how they grow their produce, whilst they may not be certified organic they may practice pesticide-free and sustainable farming methods.

— Wash all of your fruit and veggies using a veggie wash or add a half cup of apple cider vinegar to your sink of water and let your fruit and veggies soak before gently scrubbing, rinsing and storing.

— Avoid all preservatives – basically anything that includes a number should be avoided. You are likely to find preservatives in commercial dressings, dried fruit, snacks, packaged fruit, fruit juices, breads and most processed foods.

— If it is difficult for you to buy organic produce, make an extra effort to buy the below foods organic. They are classified as the "dirty dozen" due to their generally higher concentration of pesticides.

- **The Dirty Dozen:** Apples, Celery, Cherry Tomatoes, Cucumber, Grapes, Nectarines, Peaches, Potatoes, Snap Peas, Spinach, Strawberries, Capsicum.

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1 M. Baranski. et al., 'Higher antioxidant concentrations and less cadmium and pesticide residues in organically-grown crops: a systematic literature review and meta-analyses', British Journal of Nutrition, vol. 112, no.5, 2014, pp. 794-811.

2 C. Leifert et al., "Higher PUFA and omega-3 PUFA, CLA, a-tocopherol and iron, but lower iodine and selenium concentrations in organic bovine milk: A systematic literature review and meta- and redundancy analysis", Journal of Nutrition, vol.115 (6), 2016, pp.1043-1060.

3 Y. Chiu et al., 'Fruit and vegetable intake and their pesticide residues in relation to semen quality among men from a fertility clinic'. Human Reproduction, vol. 30. no.6, 2015, pp.1342-1351.

4 M. Jose, et al., 'Prenatal exposure to organochlorine compounds and birth size', Paediatrics, vol. 139, no.1, 2011.

### For Beauty

— Removing pesticides from your diet lightens the load on your liver's detoxification system which ensures that hormones are being excreted effectively. Hormone imbalance, and an excess of oestrogen and testosterone are what tend to play havoc with sebum balance and exacerbate acne production, particularly around the cheeks (oestrogen), forehead and chin (testosterone).

— Preservatives and pesticides can be allergens which not only affect immunity but also irritate the skin, leading to inflammation, redness and even eczema.

## Greens Galore

### Why?

— **Source of essential minerals and nutrients.** Green vegetables are probably one of the very best things that you can eat for your fertility. They contain an abundance of hormone balancing and fertility boosting nutrients including B vitamins, iron, vitamin A, vitamin C and magnesium. Leafy greens in particular are rich in folic acid, a critical nutrient in reproductive health and developing foetuses.

— **Provide alkaline balance.** An acid alkaline balance is essential for our bodies to function optimally. Western diets tend to be abundant in acid-forming foods including sugar, white processed foods, coffee, alcohol and meat which can lead to issues such as vaginal infections, urinary tract infections, yeast infections, menstrual difficulties, fungal problems and even infertility. Sperm are also unhappy in an acid environment within vaginal fluid which can make them swim less effectively and have trouble surviving to make the journey towards the egg. Eating an abundance of vegetables and leafy greens ensures there is an appropriate acid-alkaline balance in the body.

— **Provide hormone regulation & assist the body's detoxification processes.** Vegetables are loaded with fibre which assists in removing excess hormones, in particular the "bad" form of oestrogen. Cruciferous vegetables such as cauliflower, broccoli, cabbage, Brussels sprouts, bok choy and kale contain glucosinolates which help the liver produce enzymes for detoxification. Bitter vegetables such as bitter gourd, dandelion greens, mustard greens and chicory promote the production and flow of bile which is important in the excretion of toxins from the body.

### For Beauty

— Keeping up your intake of greens ensure that you are continually cleansing your body of excess hormones and toxins. Excess hormones are what play havoc with conditions such as acne and oily skin. After a week or two on a green smoothie a day the skin has an incredible way of becoming blemish-free and smooth.

— Bitter greens have an excellent way of nourishing the liver and promoting the production of enzymes required to absorb and digest proteins and fats. These are nutrients required to hydrate and nourish the skin and produce collagen.

— Greens are rich in folate and B vitamins which are excellent anti-inflammatory vitamins. They assist in reducing redness, eczema and inflamed skin conditions.

— Increasing your intake of greens boosts your fibre intake which is critical to keeping your gut microbiome in good health – this is intricately linked to the health of your skin!

— Loading up on greens reduces the recirculation of fat and toxins in the body and ensures your body is kept full, preventing you from eating beauty destroying foods.

### How?

— When choosing leafy greens reach for spinach, romaine, kale, mustard greens, dandelion, and watercress. Bitter greens such as dandelion root and radicchio are in particular a treat for the liver.

— Rotating your greens is important. Be sure eat a variety of greens and don't always stick to eating the same ones.

— Aim to have **three cups of leafy greens daily**. One of the best ways we find to do this is by having one large salad daily (see recipes), one of our fertility smoothies daily and a bowl of steamed vegetables with one of your meals.

— Aim to have **three cups of vegetables daily**, in particular those from the cruciferous vegetable family (cauliflower, broccoli, cabbage, Brussels sprouts, bok choy and kale).

— For maximum nutrient absorption lightly steam greens or consume raw and always add a little bit of olive oil (or other fat, eg avocado or nuts) to boost absorption.

## 2. Nurture your gut microbiome

### Why?

— **Improve your nutrient absorption.** Having healthy gut flora ensures that you are absorbing nutrients required for reproductive health and general health and vitality. It is also instrumental in ensuring you are producing key vitamins such as B vitamins and vitamin K.

— **Transfer healthy gut microbiome.** We have already noted the that a baby "inherits" the microbiome from its mother with the groundwork for each person's gut flora being laid from birth which makes it critical to address your gut health. Researchers are increasingly looking at the role of gut bacteria in the development of autism specifically. One particular study found that children with autism possessed lower levels of three types of gut bacteria compared with children free of the condition[5].

— I**ncrease your immunity.** As much as 80% of our immune system can found in our gut lining so ensuring that yours is kept intact will eliminate the issue of infection as a cause of conception problems.

— **Enhance sperm count.** Very new research has shown that men who are put on probiotics to establish beneficial strains of bacteria in the gut showed a higher sperm count, a higher count of sertoli cells which are responsible for testosterone levels, elevated testosterone, and more vigorous ejaculum[6].

— **Improve chances of conception.** Fermented foods nourish the health of the gut as well as other mucosal surfaces, like the vagina. A healthy gut microbiome will also ensure that you have a healthy vaginal ecosystem, that you are less likely to have chronic low grade vaginal infections thus providing sperm with a better chance to survive and travel to the egg[7].

### For Beauty

— The health of our belly is often overlooked as one of the critical factors in determining the health of our skin.

— Having a leaky gut disrupts the flora in the skin as it creates inflammation which affects the integrity and the protective function of the skin. This can then lead to a drop the microbial power of the skin to fight against infection and inflammation.

— Research reports show that small intestine bacterial overgrowth (SIBO), a condition involving inappropriate growth of bacteria in the small intestine, is ten times more prevalent in people with acne rosacea than people not suffering from SIBO, and that a correction of gut flora led to marked clinical improvement in their skin conditions[8].

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5 D. Kang et al., 'Reduced incidence of Prevotella and other fermenters in intestinal microflora of autistic children,' PLoS ONE, vol.8, no.7, 2013.

6 S.Weng et al., 'Bacterial communities in semen from men of infertile couples: metagenomic sequencing reveals relationships of seminal microbiota to semen quality,' PLoS One, vol.9, no.10, 2014.

7 H.Verstraelen, 'Vaginal lactobacilli, probiotics, and IVF,' Reproductive BioMedicine Online, vol. 11, no.6, p. 674 – 675, 2005.

8 A,Parodi, 'Small intestinal bacterial overgrowth in rosacea: clinical effectiveness of its eradication,' Clinical Gastroenterology Hepatology, vol.6, no.7, p.759-64, 2008.

— Gut flora also influences the skin. Substance P is a neuropeptide produced in the gut, brain and skin that plays a major role in inflammatory skin conditions. Altered gut flora along with stress can activate the release of substance P in both the gut and the skin leading to an exacerbation in skin conditions.

— An unhealthy gut can result in maldigestion and the malabsorption of proteins, fats, and carbs, as well as vitamins. SIBO can lead to nutritional deficiencies including vitamin B12, as well as vitamins A, D, E, and K (fat-soluble vitamins) which are all critical for optimal skin health and overall good health[9].

### How?

— **Stop feeding the bad guys.** The bad flora in your gut does really have a field day with sugar, dairy and processed grains. Starve the little critters by reducing your intake of these foods and your skin will start to thank you.

— **Incorporate polyphenol rich foods into your diet.** Polyphenols have an incredible ability to balance our inner gut flora by weeding out the bad guys and encouraging the growth of good flora. Polyphenols are typically found in the skins, peels and seeds of fruits and vegetables. They have been largely stripped from our food supply but can be found in blueberries, cranberries, apple peels, cacao and carob along with grapeseed and tea. The Edible Beauty **Gut Replenish** powder contains an abundance of polyphenol rich superfoods along with gut healing herbs and prebiotics.

— **Start a probiotic.** Oral probiotics have been shown to improve skin conditions such as acne by reducing inflammation and oxidative stress as well as strengthening the intestinal barrier. In one study, 80% of participants who received a probiotic experienced improvement in their acne[10]. Choose a broad-spectrum probiotic with at least 8 strains of different probiotic species and more than 30 billion CFUS per serve.

— **Eat prebiotic and fibre rich foods.** Prebiotics provide food for probiotics and can be just as important as probiotics in maintaining healthy skin and a healthy gut. Go for foods such as asparagus, beetroot, pumpkin, flaxseeds and garlic as wonderfully rich prebiotic foods for the gut. The benefit of fibre is that it also works to sweep away toxins and excess hormones which can play havoc with the skin. **Gut Replenish** contains prebiotic rich green banana powder which works to encourage beneficial gut bacteria to flourish.

— **Eat fermented foods.** Fermented foods can be a wonderful way of introducing good gut flora into the bowel in a natural way. They also assist with improving digestion and stopping persistent sugar cravings. Try making your own fermented veggies, or kefir. If you are stretched for time you can find some wonderful pre-prepared fermented foods including Peace Love & Vegetables and Amphore Coconut Milk Kefir.

— **Improve your digestive ability.** Promoting the body's hydrochloric acid production is critical in improving the body's ability to break down and absorb food. Splash apple cider onto your salads and increase your consumption of bitter foods such as rocket, dandelion, lemon and radicchio which will all increase your digestive juice power. Edible Beauty **Detox Shot** contains bitter herbs designed to activate liver enzymes to enhance your digestive fire.

9 W.Bowe et al., 'Acne vulgaris, probiotics and the gut-brain-skin axis – back to the future?' Gut Pathogens, 2011, vol.3, no.1.
10 R. Siver, 'Lactobacillus for the control of acne,' Journal Medical Society of New Jersey, vol. 59, 1961, p.52-53.

# 3. Perfect Protein

## Why?

— **Improve your embryo quality.** Protein is essential for good quality embryos and better egg quality. This makes sense given amino acids found in protein provide the building blocks for every cell, organ, enzyme and hormone in your body and your baby's body and are crucial to foetal growth. In fact, studies in patients undergoing in vitro fertilization has shown that patients whose protein intake represented 25% of their daily diet, and whose carbohydrate intake was 40% or less had pregnancy rates four times higher than those who ate more protein and less carbohydrates while undergoing IVF[11]. Whilst this study is focused on IVF patients, it does not change the overall result which is that fertility levels and embryo quality are improved significantly.

— **The right protein.** Studies associated with protein consumption and fertility show that replacing some animal protein (meat, fish and eggs) with vegetarian protein (wholegrains, beans, nuts and seeds) can be associated with a reduced risk of infertility . One study found that a higher protein intake from meat was linked to a 32% higher chance of developing ovulatory infertility[12]. On the other hand, eating more vegetable protein may protect against infertility[13].

— **Improve your iron stores.** Both animal and non-animal protein sources are rich in iron which is an essential nutrient in fertility. Low levels of iron in women may contribute to low ovulation and poor egg health, which can inhibit pregnancy significantly.

— **Improve your liver's detoxification processes.** Protein contains amino acids which are instrumental in the liver's detoxification processes. These proteins are responsible for what is called Phase 2 of the body's detoxification which involves converting toxins into water soluble forms so that they can be excreted from the body. Sulphur containing amino acids such as taurine and cysteine are instrumental in this process. Many detox diets advocate no protein (even vegetarian protein sources) which can be defeat the purpose of a detox. Ideally, we want to be supporting the liver's excretion of toxins and chemicals to support optimal reproductive health.

## For Beauty

— One third of protein being consumed by the body is used to produce skin which makes it essential in providing the building blocks to healthy skin cells. Collagen is produced from amino acids found in protein - glycine, proline, lysine as well as Vitamin C. Adequate protein consumption therefore ensures that the skin is being kept firm, tight and plump.

## How?

— Aim for a palm sized serving of protein providing food at least two times a day before conception. Ensure that at least one of these protein serves is a non-animal protein which includes either nuts, grains/seeds or legumes.

— If you are not eating animal protein, ensure you eat TWO of the food groups below such that you have a COMPLETE vegetarian protein source. **This can include:**

- Nuts
- Grains/Seeds
- Legumes

— When choosing animal protein and eggs look for organic sources and grass-fed meat which ensures that you are avoiding growth hormones and antibiotics commonly fed to livestock to help them grow faster.

— When choosing fish ensure that it is wild caught and not a deep-sea fish which tend to be high in heavy metals.

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11 American Congress of Obstetricians and Gynecologists (ACOG) 61st Annual Clinical Meeting: Abstract 96. Presented May 6, 2013.
12 J. Chavarro et al., 'Diet and lifestyle in the prevention of ovulatory disorder infertility', Obstetrics & Gynecology, vol.110, no.5, pp. 1050-8, 2007.
13 J. Chavarro et al.,' Protein intake and ovulatory infertility.' American Journal of Obstetrics & Gynecology. vol.98, no.2, p. 210, 2008.

# 4. The Right Fats

Essential Fatty Acids include Omega 3s and Omega 6 fatty acids. They are called essential as they cannot be synthesised by the body.

### Why?

— **Regulate hormones.** Omega 3 and 6 fatty acids are constituents of the membranes of all cells in the body. They can assist in improving reproductive cell structures in the body, and promote ovulation by reducing sensitivity to the hormone prolactin which can suppress ovulation. Gamma-Linoleic Acid (GLA), an Omega-6 fatty acid found in borage oil, hemp seeds and evening primrose oil has been linked to higher progesterone levels which are important for the healthy development of the womb. Essential fatty acids are also required in all functions of the liver including detoxifying which ensures that unwanted hormones and toxins are being effectively removed from the body.

— **Enhance fertility.** One of the main benefits of consumption of Omega 3 fatty acids is that they enhance blood flow to the uterus increases oxygenation and nutrient delivery to the uterus lining allowing ensuring that it fully develops and is able to support implantation should a fertilised egg arrive. Omega 3s can also increase healthy cervical mucous production which is needed for sperm to reach the egg. Omega 3 fatty acids have been widely studied in male reproductive function. Increased DHA content in sperm membranes is associated with improved sperm motility, morphology and concentrations[14],[15]. When there are not enough fatty acids present in the body, cholesterol replaces the needed fatty acid in sperm membranes. This prevents sperm from proper maturation and may create free radicals, which damage any healthy sperm that may be present.

— **Reduce inflammation.** The consumption of Omega 3s may help lessen chronic inflammation-related fertility problems. For instance, women with high levels of EPA omega-3s were less likely to have endometriosis compared to women with low EPA levels[16].

### For Beauty

— Essential Fatty Acids are vital to our beauty. Think of a lack of fatty acids as very dry and depleted skin. Fatty acids perform two functions when it comes to the skin, they have a strong protective barrier function and provide anti-inflammatory action.

— Research suggests exciting benefits of higher dietary fatty acid consumption, including a reduction in skin damage caused by UV sunlight, a reduction in the inflammatory response associated with acne, more youthful skin appearance, and lower incidence of dry skin and skin thinning.

— So, if you are after smooth, hydrated, dewy and youthful skin, then fatty acids are essential.

### How?

— Aim for a handful of walnuts daily. They are a great source of Omega 3 fatty acids with about 2,270 mg of Omega 3 fatty acids. Consume them raw or make a fresh walnut milk with 1 cup of nuts to 2 cups of filtered water. Ensure you purchase raw walnuts, as heat damages the essential fatty acids.

— Aim for a tablespoon of chia seeds and flaxseed oil daily. They are particularly wonderful for boosting your Omega intake and regulating hormones.

— Aim for one tablespoon of raw hemp seeds daily to support progesterone balance.

— Use cold pressed olive oil (unheated) as a salad dressing and cook with coconut oil or olive oil on a very low temperature.

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14 Gulaya NM, Margitich VM, Govseeva NM et al. Phospholipid composition of human sperm and seminal plasma in relation to sperm fertility. Arch Androl. 2001; 46(3): 169-75.

15 Safarinejad MR, Hosseini SY, Dadkhah F et al. Relationship of omega-3 and omega-6 fatty acids with semen characteristics, and anti-oxidant status of seminal plasma: a comparison between fertile and infertile men. Clin Nutr. 2010; 29(1): 100-5

16 Hopeman MM et al. Serum Polyunsaturated Fatty Acids and Endometriosis. Reproductive Sciences. 2015 Sep; 22(9):1083-7. doi: 10.1177/1933719114565030. Epub Dec 23, 2014.

— Aim to eat 2 to 3 serves of fish weekly if you are not vegetarian. Avoid large fish e.g. tuna, shark (flake), stingray, gemfish, orange roughy (deep sea perch), ling, king mackerel, catfish & billfish (broadbill, swordfish & marlin) which are high in mercury, crustaceans which are polluted and raw fish which may contain bacteria. Wild fish is preferable to farmed (salmon & trout). Ask your fishmonger for fish that are wild caught. Examples include wild caught sardines, barramundi, trout, snapper, John Dory, cod and perch.

— To ensure that you are not over consuming Omega 6 fatty acids which can shift the Omega 3 to Omega 6 ratio such that you are not receiving the anti-inflammatory benefits of your Omega 3 intake, eliminate the consumption of all vegetable oils (sunflower, corn oil, soybean oil and margarine) and avoid the consumption of grain-fed meat and eggs.

# 5. Dose up on antioxidants

### Why?

— **Protect your reproductive system.** Oxidative stress may be negatively affecting sperm and egg health. Pregnancy complications such as spontaneous abortion, recurrent pregnancy loss, and preeclampsia can develop in response to oxidative stress. Studies have also shown that lifestyle factors such as cigarette smoking, alcohol use, and recreational drug use can promote too much free radical production, which could in turn affect fertility. Exposures to environmental pollutants are of increasing concern, as they too have been found to trigger oxidative states, possibly contributing to female infertility. Antioxidants are critical when it comes to reducing both sperm and egg damage. Vitamins C, E and bioflavonoids act as buffers to any environmental or endogenous damage that is being directed at our reproductive system.

### For Beauty

— Antioxidant-rich foods perform three critical roles when it comes to boosting beauty. They prevent collagen breakdown and UV damage, encourage collagen synthesis, and promote cellular repair and healing.

— Antioxidant-rich foods prevent collagen breakdown by neutralising free radicals, unstable electrons that have an unpaired electron in their outer shell – a bit like a knife without a sheath. Antioxidants sheathe the knife, binding unstable electrons, to prevent them from attacking collagen strands and other cells in the skin's architecture.

### How?

— There is no single miracle antioxidant! We recommend that you take a "cocktail" approach and consume a variety of different antioxidants. After all, there is strength in numbers and we see wonderful results when these superfoods are consumed together. Think colourful fruits and vegetables. These are key as the bright pigments represent an abundance of antioxidant protection.

— Edible Beauty **Native Collagen** powder contains an array of antioxidant rich botanicals including Australian natives, sea buckthorn and Macqui berry. Designed to support healthy collagen production and ward off free radical damage, it provides a natural boost in vitamin C, with one teaspoon providing four times the Recommended Daily Intake (RDI) of vitamin C.

# Avoid foods

## Dairy

### Why avoid?

Whilst evidence and opinions regarding dairy consumption and fertility vary, I have a few reasons to recommend avoiding cow's milk.

— **Hormone imbalance.** Dairy products are estimated to contain a range of hormones including prolactin, oestrogen, progesterone, insulin, oxytocin, growth hormone so it is no surprise that consuming dairy will affect hormone levels. In fact, it has been estimated that milk and dairy products account for 60-70% of oestrogen consumed[17]. The reason behind the high levels of oestrogen found in dairy milk has to do with the modern farming process designed to extract as much milk from cows as possible. In traditional farming communities and before farming became increasingly commercialised, cows were milked for five or six months after they give birth. These days the cows are milked for 10 months a year, which is only possible because she is impregnated by artificial insemination while still secreting milk from her previous pregnancy. Milk from pregnant cows contains far higher hormone levels than milk from nonpregnant ones—five times the oestrogen during the first two months of pregnancy, according to one study, and 33 times as much oestrogen as the cow gets closer to term[18].

— **Antibiotics and pesticide exposure.** As a result of cows having to produce more milk than they have been designed to, their mammary glands are prone to infection or mastitis. Hence dairy cattle are given intra mammary infusion of antibiotics to control mastitis. Antibiotics used include erythromycin, penicillin, tectracycline to name a few[19]. Drugs are also applied to control endoparasites, ectoparasites and several illnesses and to increase milk production. These drugs can be detected in milk supply for a few days after being administered. Whilst there is a maximum limit of drug use in livestock, "over the legal" amounts of antibiotics are frequently detected. Pesticides found in the feed of cows also find their way into milk supply. Pesticides are correlated with male infertility given their ability to decrease testosterone concentration either by inhibiting release of follicle stimulating hormone or luteinising hormone[20].

— **Beauty Banishing.** Dairy consumption promotes insulin production which is one of the key reasons it leads to increased oil production and acne. Another reason to stick to almond milk.

### What to do?

— Stick to milk alternatives such as almond milk and coconut milk.

— Small amounts of goat's and sheep's milk cheese will not have the hormone disrupting effects that cow's milk dairy products have.

— Aim to have three serves of the below foods daily for calcium:

- 60 grams raw almonds
- 1 cup of almond milk
- 2 tablespoons of tahini
- 2 cups of kale
- 2 cups of collard greens
- 100 grams of sardines

17 S.Hartmann et al., 'Natural occurrence of steroid hormones in food'. Food Chemistry, vol.62, no.1, pp. 7–20, 1998.
18 D. Ganmaa et al.,' The possible role of female sex hormones in milk from pregnant cows in the development of breast, ovarian and corpus uteri cancers, Medical Hypotheses, vol.65, no.6, pp. 1028-37, 2005.
19 G.Korsrud et al., 'Bacterial inhibition tests used to screen for antimicrobial veterinary drug residues in slaughtered animals,' Journal of AOAC International, vol. 81, pp. 21-24, 1998.
20 R. Kaur et al., 'Potential pathways of pesticide action on erectile function – A contributory factor in male infertility,' Asian Pacific Journal of Reproduction, vol. 4, no.4, pp- 322-330, 2015

# Alcohol

### Why Avoid?

Alcohol consumption can be one of the items on the avoid list that requires the most convincing. In truth, the scientific evidence about how low to moderate **drinking** affects male and female fertility is not entirely clear. Below, I provide a few reasons why drinking can be of detriment to both you and your unborn baby.

— **Greater success of pregnancy.** Several studies have shown that women who reduce or abstain from alcohol during the pre-conception period have greater odds of becoming pregnant. Moderate-to-heavy alcohol intake decreases fertility, increases the time taken to conceive, increases the risk of miscarriage and negatively impacts on the success of IVF treatment[21,22]. One study which included research on couples who had already undergone around three failed cycles of IVF, found that women who abstained from all alcohol had a 90% chance of achieving a successful pregnancy, over three years whilst women who drank an average of just three small glasses of wine a week had a 30% chance of conceiving over the same period. This study implies that alcohol can affect the normal development of the egg, so whether you are trying to conceive naturally or via assisted fertility methods, the effect of alcohol would be the same.

— **Improved sperm quality and libido.** Alcohol can affect male fertility as much as it can affect female fertility. Studies show alcohol can cause impotence, reduce libido and affect sperm quality[23]. How much alcohol does it take to impact sperm quality? It seems that as little as five units of alcohol per week can have an impact. A study published in the journal BMJ Open, examined 1,200 Danish male military recruits between the ages of 18 and 28, all of whom underwent a medical examination between 2008 and 2012. As part of the assessment they were asked about their drinking habits and invited to provide sperm and blood samples. Among this group of men, researchers found that the higher the tally of weekly units, the lower was the sperm quality in terms of sperm count and the proportion of sperm that were of normal size and shape. The effects were evident in those who drank five or more units a week and most apparent in those who drank 25 units or more. Those who typically drank 40 units a week had 33% lower sperm count and also had 51% less "normal looking" sperm than men who drank between one and five units a week[24].

— **Pregnancy complications.** Pre-natal alcohol exposure associated with spontaneous abortion, prenatal and postnatal growth restriction and birth defects[25,26]. It is also one of the leading causes of neurodevelopmental deficits in children. Whilst you may argue that you will stop drinking alcohol once you fall pregnant, often there will be at least a week or two of exposure prior to women noticing that they are actually pregnant. You would not want to risk the harmful effects of alcohol during this time.

— **Beauty banishing.** There is no doubt that alcohol consumption leads to free radical damage in the body and accelerates ageing. Studies show that drinking damages parts of cells specific to ageing and cancer with it causing stress and inflammation to telomeres which are the ends of DNA strands that stop them from unravelling. As people age, telomere length shortens progressively and eventually they are so damaged the cell dies. Alcohol accelerates this process which directly leads to ageing and cell death[27]. Alcohol also dehydrates the body, leading to dry and dull skin with reduced plumpness and elasticity. You may have been misled to think that drinking red wine enhances your beauty – this is far from the truth. The red pigment in alcohol, which represents the flavonoids and antioxidants found in grapes, is what is responsible for the antioxidant effects – not the alcohol itself. You are better off eating a handful of grapes or berries for the same impact without the alcohol damage.

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21 R. Hakim et al., 'Alcohol and caffeine consumption and decreased fertility,' Fertility and Sterility, vol.70, no.4, pp. 632–637, 1998.
22 T.Jensen et al., 'Does moderate alcohol consumption affect fertility? Follow up study among couples planning first pregnancy,' British Medical Journal, vol. 317, pp.505–510, 1998.
23 G. Donnelly et al., "Direct effect of alcohol on the motility and morphology of human spermatozoa." Andrologia, vol.31, no.1, pp. 43-47, 1999
24 T.Jensen et al., 'Habitual alcohol consumption associated with reduced semen quality and changes in reproductive hormones; a cross-sectional study among 1221 young Danish men,' British Medical Journal, vol.4, no.9, e005462. 2014.
25 G.Windham et al., 'Moderate maternal alcohol consumption and risk of spontaneous abortion,' Epidemiology, vol.8, no.5, pp.509-514, 1997.
26 U.Kesmodel et al., 'Moderate alcohol intake during pregnancy and the risk of stillbirth and death in the first year of life,' American Journal of Epidemiology. vo.155, no.4, pp. 305-10, 2002
27 S.Pavanello et al., 'Shortened telomeres in individuals with abuse in alcohol consumption,' International Journal of Cancer, vol. 129. No.4, pp.983-993.2011.

### What to do?

— Replace alcohol with sparking water spruced up with pomegranate juice or fruit juice.

— Get into the habit of drinking fresh water infused with lemon lime, berries and herbs such as mint and basil. You will look forward to the fresh fruity flavours.

— Experiment with iced teas and mocktails for special occasions.

— If you must reserve alcohol for very special occasions, and then only indulge in one glass rather than two or three. One glass every three weeks should not impact your fertility. However, it is easier to just pull the plug on alcohol- you will be surprised at how energised and stable you feel when you stop drinking it altogether.

# Caffeine

### Why Avoid?

Many of us do not think twice about having a cup of coffee or two daily. It seems to be an acceptable and harmless practice. However, when it comes to fast tracking pregnancy and ensuring a healthy pregnancy and baby, I recommend replacing it with herbal tea.

— **Pregnancy loss.** Miscarriage and caffeine consumption are frequently linked. A study conducted by the National Institutes of Health and Ohio State University involved information from the Longitudinal Investigation of Fertility and the Environment Study, which included 501 couples interested in having children who were recruited to participate over a four-year period. The men and women were asked to record their daily use of cigarettes, caffeinated drinks, alcohol and multivitamins during pre-conception and early pregnancy. The data shows that couples who drank more than two caffeinated drinks a day during the weeks before conception had a higher risk that the woman would miscarry. Interestingly this implies that both mum and dad's caffeine intake is implicated. So males do not get off scot free on this one[28].

— **Hormone imbalance.** There may be a link between caffeine consumption and oestrogen levels in the body. One particular study found that amongst 500 women aged 36-45, those who consumed at least 500mg of caffeine per day had nearly 70% more oestrogen during their early follicular phase of their menstrual cycles as compared to women who consumed no more than 100mg of caffeine daily.

— **Beauty banishing.** In much the same way as alcohol, caffeine acts as a diuretic, robbing the skin of much needed hydration. It can also cause increase cortisol production, which not only leads to increase insulin production, a precursor for acne, it can reduce the uptake of beauty boosting minerals and nutrients.

### What to do?

— Replace your daily coffee with a tea or dandelion root chai. Having two cups of green tea or one cup of black tea daily during preconception is harmless.

— Experiment with herbal teas -some of my favourites include licorice, dandelion chai, peppermint and chamomile.

— Stop drinking all green tea and black tea when pregnant. Herbal teas such as chamomile, ginger, peppermint and rooibos are all safe.

28 G. Louis et, al., 'Lifestyle and pregnancy loss in a contemporary cohort of women recruited before conception: The LIFE Study, Fertility and Sterility, vol. 106, no.1, pp.180-188. 2016.

# Trans-fats

### Why Avoid?

— **Infertility.** Obtaining just 2% of calories from trans-fats instead of healthier monounsaturated fats is associated with a doubled risk for ovulation-related fertility problems. For women eating 1800 calories a day this equates to 4 grams of trans fats which is quite easy to consume if you are not exercising caution[29].

— **Beauty banishing.** Eating trans fats generates an inflammatory response in the body which triggers DNA- and collagen-damaging oxidative stress. This equates to ageing skin, blemishes, red skin and cell damage. There is also evidence which points to common vegetable oils like sunflower oil and canola oil causing acne. The mechanism behind this can be explained by the way in which oil production occurs in skin cells. The skin requires linoleic acid to produce a standard amount of sebum in the normal way. Linoleic acid is found in flaxseed oil and natural plant-based fats. When you ingest trans-fats like margarine instead, your body makes a different kind of sebum. This sebum contains oleic acid and is especially likely to cause whiteheads. Oleic acid is dryer than linoleic acid and may harden more easily inside of pores.

### What to do?

— Avoid all foods that list hydrogenated or partially hydrogenated oils in their ingredients.

— Avoid vegetable oils, margarines, shortening and creams.

— Avoid fried foods, fast food and processed foods which are commonly cooked in trans-fats.

— Load up on good fats found in nuts, seeds and avocados.

# Sugar

### Why Avoid?

Sugar seems relatively harmless. However, when it comes to hormones and fertility, it can be very disruptive.

— **Hormone imbalance.** Sugar in all forms, whether in a cup of tea or honey on a spread on toast has an effect on blood sugar levels which rise rapidly as soon as the sugary food is eaten. This leads to a spike in insulin levels. Insulin is required to get sugar into cells quickly. However, a large spike in insulin can lead to a subsequent crash in blood sugars and which can signal an alarm response in the body. This activates the adrenal glands to release cortisol. The adrenal glands produce sex hormones as well as stress hormones and unfortunately the body uses the same precursor, pregnenolone, both for stress hormones and for sex hormones. This means that the more stressors you experience – including sugar consumption – the fewer resources you have left to make the sex hormones that favour fertility and pregnancy.

— **Insulin resistance.** As insulin is a storage hormone which causes glucose and other nutrients to enter the cells. When we chow down on sweet or starchy foods, the body responds by releasing large amounts of insulin. Over time, the body's cells become less and less responsive to the presence of insulin. This means that sugar is less and less able to move from the blood into the cells which refers to insulin resistance. Insulin resistance is at the basis of Polycystic Ovarian Syndrome (PCOS) which affects ovulation. Insulin resistance also promotes the growth of abdominal fat. Visceral fat tissue possesses aromatase, an enzyme that converts androstenedione to oestrone and testosterone to oestradiol. The excess of adipose tissue in insulin resistance creates the paradox of having both excess androgen hormones along with excess oestrogen which inhibits FSH.

— **Nutrient depletion.** When we eat sugar, a significant amount of work is required for it to be processed. Nutrients including zinc, chromium, magnesium and thiamine (vitamin B1) are just a few of the numerous nutrients depleted in the process. These nutrients are critical to keeping our hormones in check which means we compromise our fertility for a sweet tooth.

29 J. Chavarro et al., 'Dietary fatty acid intake and the risk of ovulatory fertility,' American Journal of Clinical Nutrition, vol 85, no.1, pp 231-237, 2007.

— **Beauty banishing.** When we consume too many sugary or high-glycaemic foods these sugars react with proteins and fats in an abnormal way, producing harmful molecules called "advanced glycation end products in a process that is called "glycation." The more AGEs we have in our bodies, the more we age. Scientists have discovered this through study of diabetics. The key here is blood sugar—the higher the level of glucose in the blood, the more AGEs we produce. The more AGEs we have in our bodies, the more we age. Studies show the complications of diabetes and aging, with the AGEs particularly affecting things like collagen (which gives skin its firmness) and elastin (which helps skin bounce back after being stretched). So if you need an additional reason to avoid sugar consumption, preserving your youth has to be it!

### What to do?

— Avoid all refined sugar and added sugar. Look out for ingredients that represent sugar, this includes: sucrose, fructose, high fructose corn syrup, rice syrup, sorbitol, dried fruit and honey.

— Do not turn to artificial sweeteners such as aspartame, aspartic acid, phenylalanine, sorbitol, sucralose, Equal, Splenda etc

— Replace sugar with stevia where you need to add sweetness.

— Have a serve of fruit (low GI) or two squares of dark chocolate when you are craving something sweet.

— Consuming fermented foods such as sauerkraut and kefir will assist in curbing your cravings so adhering to this eating program should make avoiding sugar very easy.

— Try to go sugar free for at least two weeks and push through the cravings. After the two weeks your taste buds will adjust and it will be much easier to stick to a sugar free eating regime.

# Mercury Containing Fish

### Why Avoid?

According to the Center for Disease Control one in twelve women of child-bearing age already have unsafe blood levels of mercury. This is significant as blood is not a good indicator of mercury levels, it is when it leaves the blood and binds to proteins that it causes havoc[30].

— **Endocrine disruptor.** Mercury is an endocrine disrupting metal. Studies have found that mercury accumulates in the ovaries and testes, inhibits enzymes necessary for sperm production, affects DNA in sperm, causes aberrant numbers of chromosomes in cells, and causes chromosome breaks—all of which can cause infertility, spontaneous abortions, or birth defects . Mercury can also affect zinc levels which impacts progesterone balance and testosterone production[31].

— **Linked to infertility**. In a study of the effects of mercury on fertility, sub-fertile males in Hong Kong were found to have 40% more mercury in their hair than fertile controls. Infertile males with abnormal semen and infertile females with unexplained infertility also had higher blood mercury concentrations than their fertile counterparts [32].

— **Impairs foetal development.** Government guidelines around high mercury fish consumption reflect studies which have shown that exposure even to low doses of methylmercury during pregnancy can impair a baby's growing brain and nervous system[33].

### What to do?

— Avoid fish which are high in heavy metals. This includes canned tuna, fresh tuna, swordfish, mackerel and ling.

— Enjoy fish which are higher in the food chain such as sardines, wild caught barramundi, perch, silver dory, cod, hoki etc

— Supplement with high quality Omega 3s.

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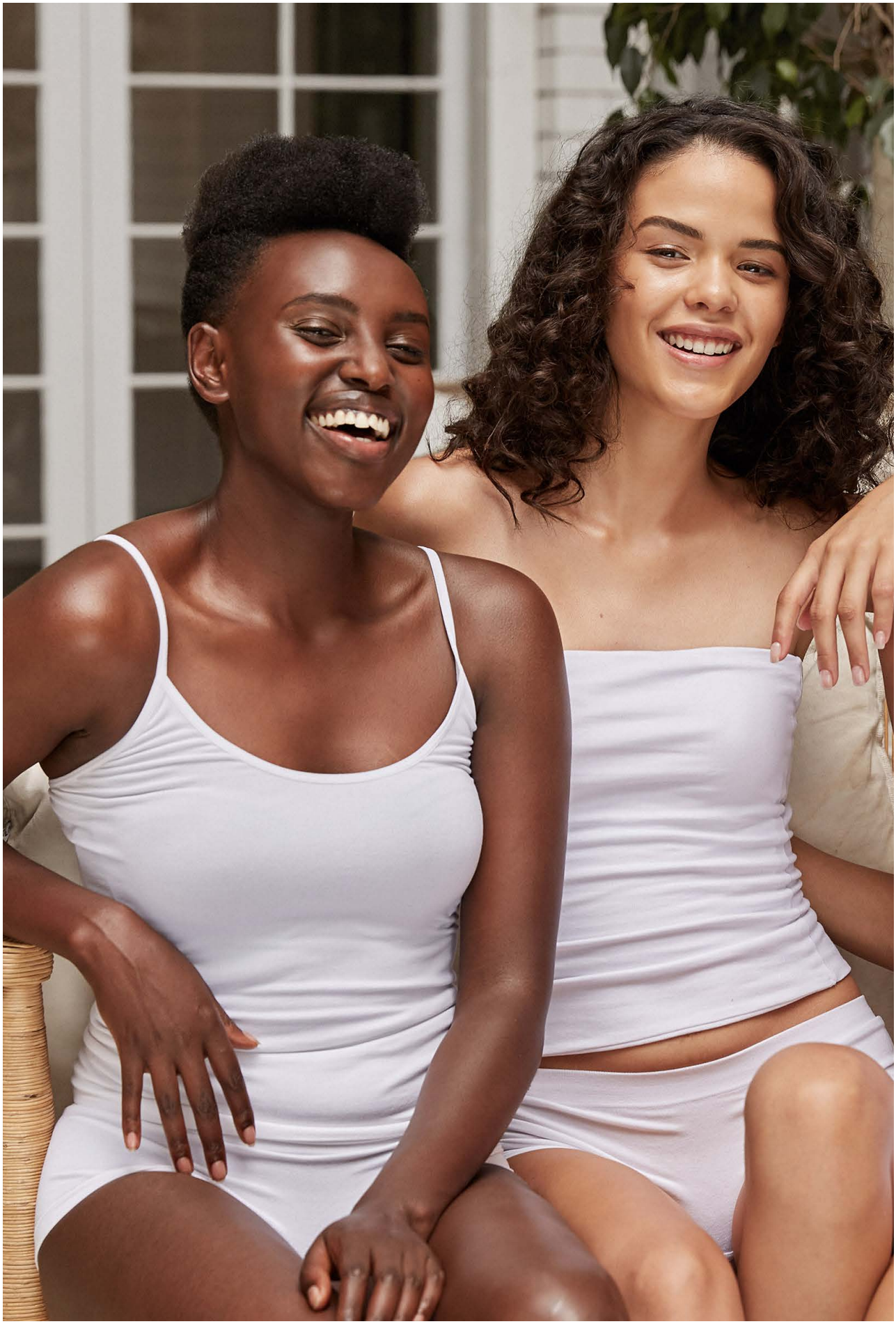
30 R.Jones et al., Blood mercury levels in young children and childbearing aged women – USA,' National Center for Environmental Health; National Centre for Health Statistics, CDC. Morbidity and Mortality Weekly Report, vol. 53, no.43, pp.1018-1020, 2004.

31 Z. Xinqiang et al., 'The Endocrine Disruptive Effects of Mercury,' Environmental Health and Preventive Medicine, vol.4, no.4, pp. 174–183, 2017.

32 K, Neeti, K and T,Prakash, 'Effects of heavy metal poisoning during pregnancy,' International Research Journal of Environment Sciences, vol. 2, no.1, pp. 88-92, 2013.

33 M.Dickma et al, 'Hong Kong male subfertility links to mercury in human hair and fish,' Sci Total Environ, vol. 214, pp.165-174, 1998.


EDIBLE BEAUTY
N°1
ISABELLE FIEMEYER



# Section Two — Supplement essentials

# Preconception and prenatal vitamins assist you in getting the necessary nutrients your diet may lack. Though it does not replace healthy eating, good quality nutritional supplements are essential. Given both the sperm and egg are equally important in the creation of a healthy foetus.

For her we recommend the below. Note that doses will depend on whether you have any nutritional deficiencies that you are aware of, in particular iron or vitamin D.

— Mutli-vitamin with ideally 100mg of B1, B2, B3, B5 and B6 and B12 in the form of methylcobalmin and folate in the form of methyltetrahydrofolate (MTHF), especially if you have an MTHFR gene mutation.
— Omega 3s, 2-3 grams of fish oil daily
— Iron, 25 mg daily
— Vitamin D, 2000 IU daily
— Zinc, 25-50 mg daily with dinner
— Magnesium, 200 mg elemental magnesium twice daily
— Antioxidant support – **Native Collagen**, 1 teaspoon in smoothie
— Gut replenishing support – **Gut Replenish**, 1 tablespoon in smoothie or water daily
— Liver support – **Beauty Detox Shot**, 2 teaspoons in a shot of water or juice
— MSM – 2000 mg daily on an empty stomach
— Maca powder – 1-2 tablespoons daily in smoothie
— Greens powder with spirulina, barley grass and/or wheat grass – refer to manufacturer directions
— If you have PCOS or hypothyroidism you may be wanting to consider additional supplements including inositol, selenium and iodine.

**For him we recommend:**

— Multi Vitamin
— Omega 3s, 2-3 grams of fish oil daily
— Vitamin D, 2000 IU daily (refer to below information if you know your blood levels)
— Zinc, 25 mg daily with dinner
— Liver support – **Beauty Detox Shot**
— Antioxidant support – **Native Collagen**
— Gut replenishing support – **Gut Replenish**
— Maca powder – 1–2 tablespoons daily in smoothie
— Green powder with spirulina, barley grass and/or wheat grass – refer to manufacturer directions
— Additional antioxidant support such as co-enzyme Q10 and herbal formulas including Gingko Biloba, Siberian Ginseng and Tribulus.

# Multi Vitamin/Prenatal Supplement

### Why?

— B vitamins are critical for hormone balance, carbohydrate metabolism along with the body's detoxification processes.

— Many women who have had trouble falling pregnancy may need to be tested for MTHFR gene mutations. Approximately 30% of the population this gene mutation has an inability to convert folate (Vitamin B9) into its active form, which can lead to difficulty falling pregnant.

### Look for:

— Products which have high doses of quality vitamins and minerals and which do not contain fillers, additives and artificial colours.

— Avoid products which contain the retinol form of vitamin A or synthetic beta-carotene.

— Activated B vitamins, are more easily absorbed and have a higher bio-availability. Look for active forms of B6 and B12 in particular. These will appear on the ingredient label as Pyridoxal-5-Phosphate (P5P) and Methyl cobalamin.

— Folate in the form of **Folinic Acid and 5-MTHF** are easily absorbed and provide higher bio-availability. If you do have an MTHFR gene mutation, taking synthetic folate will cause more harm than good so make sure you are not taking a supplement with folate in the form of folic acid. Active forms of folate are readily transported through the blood brain barrier into the central nervous system and will increase active folate levels the fastest.

— Do not rely on low levels of fish oil, calcium, magnesium, vitamin D or zinc in a multi-vitamin if you are aware of a known deficiency.

# Omega 3 Fatty Acids

### Why?

— The highest dietary source of omega-3 DHA and EPA are fish oils, particularly from deep -sea oily fish. Due to possible contaminants, such as mercury and pollutants, these dietary sources should be consumed in moderation as a source of omega-3 and some fish should be avoided altogether due to high mercury content.

— For this reason, high quality and mercury tested fish oil supplementation is often recommended for women planning to conceive and throughout their pregnancy and post-natal period to achieve the required omega-3 fat intake.

### Look for:

— Look for high quality fish oil capsules that have been purified by molecular extraction, to guarantee that the product does not contain mercury or other pollutants. Do not buy cheap and non-therapeutic products. These often contain quality fish oils with low levels of active ingredients. Many of these are insufficiently and irregularly tested for mercury and other pollutants found in ocean fish and/or are processed in a way which deteriorates the fish oils and reduces their efficacy

— Ensure that your supplement contains both EPA and DHA. They can be interconverted, so the ratio of EPA to DHA is not as significant as quality and amount are, but both should be present. A good ratio is 3:2.

— Ensure that your fish oil is mercury and lead free. Some manufacturers are not as stringent as need be and do not add this to the labels. You do not want to get omegas at the expense of consuming more toxins.

— If you are vegan, I recommend a high-quality algae extract. Ensure you do your research once again to ensure that the algae are free of ocean-borne contaminants like mercury and dioxin. Nordic Naturals Algae Omega is a pure vegan source of EPA and DHA.

— In addition to fish oil I recommend adding 2 tablespoons of flaxseed meal and 1 tablespoon of chia seeds to your diet. They also contain Essential Fatty Acids and fiber. Flaxseed in oil form may be susceptible to rancidity so I recommend against this.

# Iron

### Why?

— Iron deficiency in pregnancy is common with up to 1 in 5 women suffering from iron deficiency anemia at the time of pregnancy. Taking steps to ensure that your iron levels are adequate in the preconception period means that they will be more easily maintained during pregnancy.

— In fact, studies show that a mother's iron deficiency early in pregnancy may have a profound and long-lasting effect on the brain development of the child, even if the lack of iron is not enough to cause severe anemia. This means that it is imperative you take steps to boost your iron stores during the preconception period prior to conceiving[34].

### Look for:

— Ensure you have your iron stores checked in particular if you are vegan or have a history of anemia. If your ferritin (iron store) levels are less than 50 micrograms you seek medical advice about the best supplement to boost your levels. Supplement with approximate 25 mg/day of iron during preconception if your iron stores are normal.

— Look for an iron supplement that is slow release to avoid any gastrointestinal side effects.

— Ensure that the bio-availability of your iron supplement is high. Traditional iron supplements like ferrous sulphate have low rates of absorption so you need to take high starting doses to restore your iron levels to normal. Consider a supplement such as Spat one Iron which contains naturally occurring iron-rich water from North Wales.

— Ensure your iron supplement is sugar, gluten and preservative free.

# Vitamin D

### Why?

— Vitamin D has been shown to impact endometriosis, polycystic ovary syndrome (PCOS) and can assist in balancing levels of progesterone and estrogen, which regulate menstrual cycles and improve the likelihood of successful conception[35].

— In men, vitamin D is essential for the healthy development of the nucleus of the sperm cell, and helps maintain semen quality and sperm count. Vitamin D also increases levels of testosterone.

— A baby derives vitamin D exclusively form its mother so a low level in pregnancy can have significant repercussions associated with foetal growth and development, immunity and general health.

— A growing body of evidence shows that vitamin D plays a crucial role in disease prevention and maintaining optimal health. Vitamin D affects nearly 3,000 of the 30,000 receptors in the body.

— Very few foods contain a large amount of vitamin D and as we are spending more and more time indoors, the body is unable to produce sufficient levels of the vitamin.

34 C.Mihaila et al., 'Identifying a Window of Vulnerability during Fetal Development in a Maternal Iron Restriction Model, PLOS One, vol.6, no.3, e17483.

35 E. Lerchmbam and B.Pietsch, 'Vitamin D and fertility-a systematic review,' European Journal of Endocrinology, vol.166, no.5, pp. 765-78, 2012.

— According to one of the leading vitamin D researchers, Dr Michael Holi, up to 50% of the general population is at risk of vitamin D deficiency and insufficiency. A large proportion of pregnant women have also been found to be vitamin D deficient.

— I highly recommended that your stores are tested at least four months prior to planned conception. The recommended test is total 25-hydroxy vitamin D (25-OHD).

### Look for:

— Look for a supplement that is preservative free and free of fillers.

— There are two forms of supplemental vitamin D—D2 and D3. Supplement with vitamin D3 as this is what is naturally produced by our skin and is therefore more easily absorbed. If you are vegan, however, opt for vitamin D2 which is generally produced using yeast or mushrooms.

— Whilst standard recommendations for pregnant women call for supplementing with 400 IU daily of vitamin D, the daily recommended dose on current blood levels. The below acts as a guide for both men and women[36].

| If 25–OHD level is ... | ... then supplement with* |
|---|---|
| <20 ng/mL | 50,000 IU oral vitamin D weekly for 12 weeks |
| 20–32 ng/mL | 2,000–4,000 IU oral vitamin D daily (~15,000–30,000 IU weekly) |
| >32 ng/mL | Continue to supplement with daily 400 IU |

# Zinc

### Why?

— Zinc is used in over 300 enzyme reactions in the body and is one of the most important minerals when it comes to reproductive health. It can be difficult for us to obtain all of the zinc we need due to poor soil health and the heating of food which can destroy as much as 50% of the zinc in food.

— In men, zinc deficiency has been correlated with impaired sperm production with zinc supplementation significantly increasing semen volume, sperm motility and the percentage of normal sperm morphology[37]. This makes sense given zinc is found in high concentration in sperm and is needed to make the outer membrane and tail of the sperm.

— For women, zinc is important in helping your body utilise estrogen and progesterone and keep hormone levels stable throughout the menstrual cycle. A deficiency can lead to hormone imbalance, abnormal ovarian development, and menstrual irregularity. When your body is low on zinc it also inhibits the metabolism of protein, which in turn can lower the quality of eggs that are ripe for fertilization.

— Low levels of zinc have been directly linked to miscarriage in the early stages of a pregnancy according to the The Centers for Disease Control's Assisted Reproductive Technology Report, a US report which tracks numerous fertility research reports administered in the country.

### Look for:

— If you suspect you may be zinc deficient it is a great idea to have your plasma zinc levels tested through a blood test along with your serum copper levels.

— Under normal circumstances, 15 to 25 mg daily is ideal with zinc picolinate and zinc citrate being the forms of zinc that in my experience tend to be absorbed most effectively.

36 B.Hollis, 'Vitamin D and pregnancy,' OBG Management, vol.23, no.8, pp.30-36. 2011.
37 J.Zhao et al. 'Zinc levels in seminal plasma and their correlation with male infertility: A systematic review and meta-analysis,' Science Rep, vol.6, 2238, 2016.

# Magnesium

### Why?

— Magnesium is the fourth most abundant mineral in the body and is required for nearly every function in the body. Magnesium is sadly being farmed out of our soil so even though it is found in green vegetables and nuts and seeds, many of us are magnesium deficient.

— Magnesium is a nervous system nourisher and hence assists in balancing cortisol levels. This ensures that reproductive hormones are kept in check. Magnesium is also responsible for balancing insulin production which makes it instrumental in addressing blood sugar imbalances which makes it vital in assisting conditions such as Polycystic Ovarian Syndrome. Magnesium also activates vitamin D which as mentioned above is critical in fertility health and assists in the creation of key steroid hormones including progesterone, estrogen, and testosterone.

### Look for:

— Magnesium levels can be hard to determine via a blood test as levels are found highest with red blood cells. However, signs of magnesium deficiency are often obvious and can include depression, anxiety, chocolate cravings, restless legs, insomnia and premenstrual syndrome.

— Supplementing magnesium for a short period is harmless and I recommend that everyone supplements with at least 200 mg of magnesium daily, or 300 to 400 mg if you have a known deficiency.

— Look for a magnesium tablet or powder containing magnesium glycinate which is a highly bio-available form of magnesium and the least likely to have a laxative effect. Avoid fillers and preservatives along with added nutrients (which are not necessary) if you are taking a magnesium powder.

— Magnesium is also well absorbed via the skin so indulging in regular Epsom salt baths (use about 1 cup) is of benefit as is applying a magnesium oil onto the soles of your feet before bedtime.

# Functional Food Supplements

### Why?

The below food supplements have been instrumental in my own personal experience and that of my clients in giving them the additional nutritional, hormonal and detoxification support to successfully fall pregnant. You can get MSM in a powder form however I recommend taking it as a capsule as it is not the most pleasant tasting supplement.

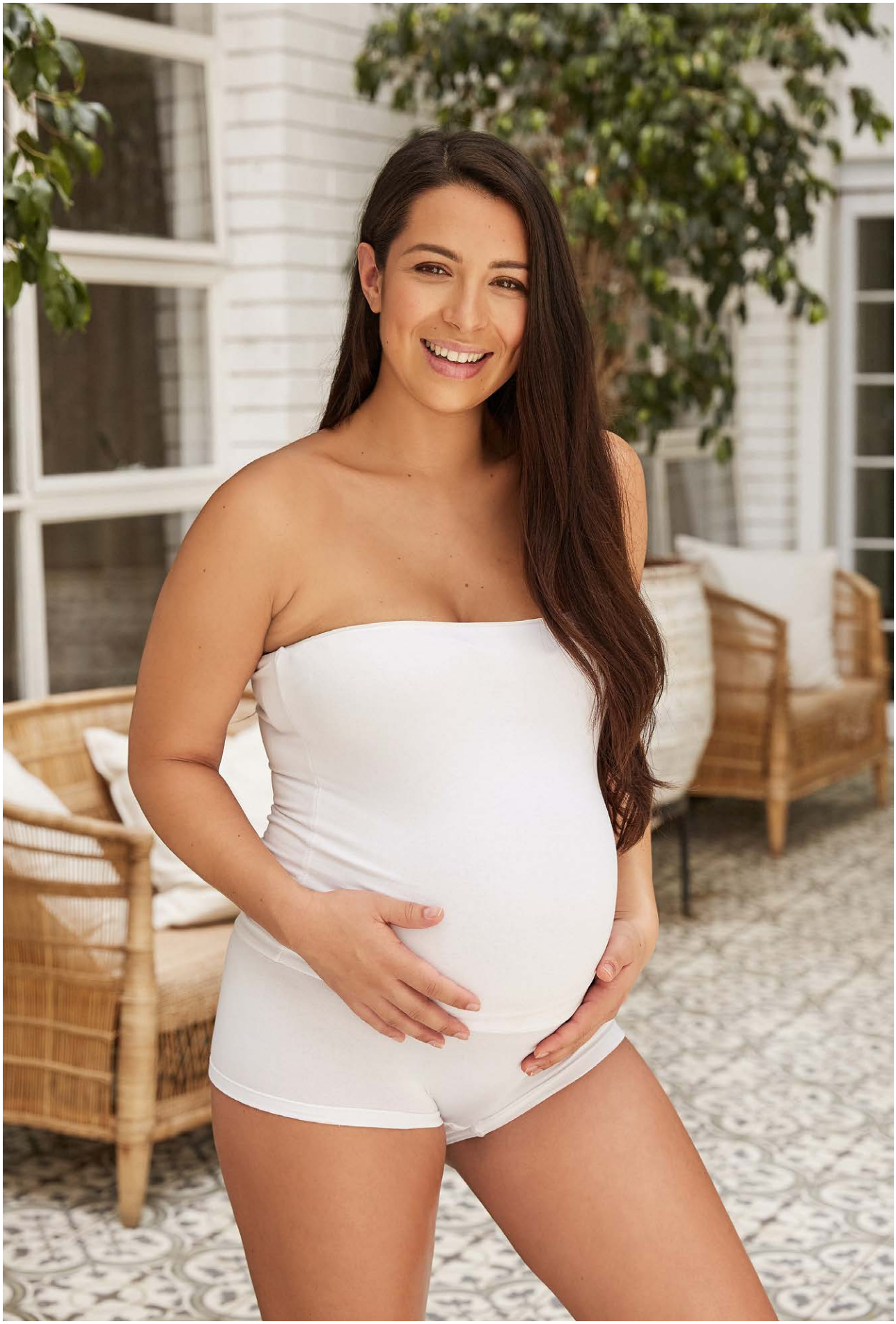
The below fertility smoothie makes it easy to get all of them in along with your green's quota. Get your partner into the habit of having this daily as well!

### Fertility smoothie

- 1 cup kale, baby spinach or mixed greens
- 1 cup berries (frozen organic work well) or 1 frozen banana if you want something sweet
- 1 tablespoon **Gut Replenish**
- 1 teaspoon **Native Collagen**
- 1 tablespoon Maca Powder
- 1-2 teaspoons of Greens Powder
- 2–3 tablespoons of flaxseed meal or LSA (linseed, sunflower seed, almond meal)
- 1 cup of water

Blend all ingredients into a high-powered blender and enjoy. Make it a ritual to have this drink daily along with your supplements – you will not only feel healthier, your skin and bub-to-be will thank you for it!

Fertility smoothie



# Section Three —
# Detoxing on the outside

## When it comes to fertility, what we put on our body is just as important as what we put inside it. Choosing toxin-free skin care that's "edible" (i.e. safe enough to eat) is critical to ensuring we maximize our chances of the best pregnancy possible.

You may know that I developed a skincare range specifically for this reason. The product range was born out of my desire to ensure both men women had pure, therapeutic and luxurious skincare that was also fertility friendly and literally edible. I was working at a Sydney fertility clinic recommending women wear pure products on their skin and was shocked to find that even products marketed as natural and edible were not of a purity I would be recommending for daily use.

Whilst you may be quite aware (or now aware) of the reasons that optimal fertility relies upon a healthy daily diet, it may not have been brought to your attention that your personal care products are equally as important.

From the moment we wake up in the morning to the time we hop back into bed, we are using countless products, many of them toxic, on our skin. Think about your daily beauty routine. Most of us will have a shower, using a bath soap, shower gel and/or exfoliant. We may wash our hair with a shampoo, conditioner, perhaps applying a mask or treatment prior to this.

We will then proceed to dry ourselves, apply deodorant, moisturise our body apply a serum to our hair and brush our teeth. From there our face skincare procedure will take hold. This may involve cleansing, toning a serum, eye cream, face cream or face oil. I have already noted 16 products that may have potentially been used, and our makeup has not even been applied! Depending on how makeup dependent we are we may be using anywhere between 5 to 15 products on our face (primer, foundation, concealer, under-eye concealer, eye shadow, eyebrow liner, eyeliner, mascara, illuminator, blush, bronzer, lip pencil, lipstick, gloss) which amounts to over 30 products having been used and we have not even left our homes leaving a lot of room for chemical exposure.

# Living the Principle of Edible Beauty

Below, I provide a few of the general reasons why this is just as critical.

## 1. We absorb over 60% of the ingredients we put on our skin... and we are putting a lot on it.

Our skin is the largest organ in our body, and it's **permeable**. This means that when we apply something to our skin, it doesn't just sit on the surface. Rather, it penetrates through the skin and into the blood where any toxins present in the products can contribute to hormone disruption, lowered immunity, allergies and toxin overload.

Whilst some may argue that the skin is impermeable, however there is enough evidence for us to confirm that the skin is absorbing what we are applying on it.

Over the past fifteen years, more than 10,000 Americans have had their blood tested by the U.S. Centres for Disease Control and Prevention (CDC) in an attempt to determine their "chemical body burden." The results of the CDC study were stunning: even those who lived in remote areas were found to have hundreds of synthetic chemicals in their bloodstream. Many of the toxins identified are common ingredients in mainstream personal care products[38]. How is it that these products enter the skin?

The outer layers of our skin are designed to keep elements such as water and bacteria entering the skin and keeping our internal organs and fluids in. However, absorption of chemicals through the skin is very real. We just have to think about the use of nicotine patches or hormone control patches. It is possible to die from an overdose of a fentanyl patch. The rate at which particles are absorbed into the skin depends on the structure and the size of the ingredient. Some chemicals are too large to be absorbed into the skin, but when it comes to skincare many products have been actually designed to have particles which penetrate the skin more quickly, in particular sunscreens and lotions. Factors such as the concentration of a product, part of the body exposed and length of time exposed will all influence the absorption factor of chemicals on the skin. For instance, the rate of absorption of products applied to the forehead and scalp is four times greater than that applied to the forearms which makes it even more important what skincare and haircare we are using.

Chemicals can also be absorbed into the body by being inhaled. Toxins found in fragrances (often labelled "parfum") are a key source of phthalates which I will discuss further below. They can enter the body through inhalation, depositing into the airways and being absorbed into the blood via the lungs. Skincare and cosmetic products can also be literally consumed- for instance lipsticks or products which come close to the lip area.

A key concern I have about the absorbability of various products we are using externally is the significant lack of data surrounding the impact of a combination of toxic ingredients on the skin as well as the impact of using these products from a very young age. Whilst in isolation some ingredients may be relatively harmless, when combined with other questionable ingredients and when used frequently over a long period of time, their toxic potential may be amplified.

38 CDC's Fourth National Report on Human Exposure to Environmental Chemicals. 2009. Available at: https://www.cdc.gov/exposurereport/pdf/bluesheet.pdf

# 2. Toxins in skin care may contribute to infertility and hormone imbalance

Studies showing that toxins being found in skincare are contributing to both male and female infertility and hormone imbalance are becoming more and more prominent. When we consider the safety and regulation surrounding the use of chemicals in cosmetic products, it becomes apparent why exposure to such harmful ingredients is allowed to take place.

In Australia there is no pre-market regulation requiring that chemicals being used in cosmetic products are being tested for health and safety prior to their manufacture and sale. Importers of ingredients/chemicals are required to check with the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) and register any new chemicals being imported into Australia. Manufacturers are required to list all chemicals on product labels, however there are no mandatory regulations that require pre-market assessment of chemicals used to formulate products and no pre-market regulation that requires testing of each product prior to sale in Australia.

Regulation of cosmetics in the USA is conducted by the Food and Drugs Administration (FDA). In truth, personal care products are one of the least regulated industries in the USA. The Federal Food, Drug and Cosmetics Act (FFDCA) includes 112 pages of standards for food and drugs, but just a single page for cosmetics. Furthermore, the FDA does not require companies to conduct pre-market safety testing of cosmetics products and ingredients, or review/approve cosmetic products or ingredients before they are sold to the public. Manufacturers are not required to register their cosmetic establishments, file data on ingredients or report cosmetic-related injuries. Instead, the FDA relies on voluntary reporting of ingredients, injuries and establishments which leaves a lot of room open for presence of toxic ingredients to come through into products we are using every day.

In comparison, the European Union has a hazard-based, precautionary approach that chemicals linked to cancer and birth defects do not belong in cosmetics regardless of the concentration of the chemical being used. European Union law also requires pre-market safety assessments of cosmetics, mandatory registration of cosmetic products, government authorisation for the use of nanomaterials and prohibits animal testing for cosmetic purposes. The European Union law has banned 1,328 chemicals from cosmetics that are known or suspected to cause cancer, genetic mutation, reproductive harm or birth defects. In comparison, the United States FDA has only banned or restricted 11 chemicals from cosmetics.

One of the main reasons toxins in skin care affect fertility is that they mimic natural hormones, creating endocrine disruption and hormonal imbalance. Many of these toxins are termed xenoestrogens as they have the ability to bind to our estrogen receptor sites, disrupting the function of the endocrine system. What is a large unknown is the effect of chronic, decades-long exposure to these hormone disruptive toxins and how they interact

# 3. During pregnancy your baby is absorbing what you put on your skin.

If our bodies are absorbing what we put on our skin, it makes sense that our babies are also taking it in. Studies show toxic chemicals are routinely found in the umbilical cords of babies, and when researchers screened for more than 400 chemicals, 287 toxins were detected within the umbilical cord blood of newborns. Of these 287 toxins, 217 were neurotoxins and 208 are known to damage growth development or cause birth defects. The toxins included BPAs and synthetic fragrances found in skin care, cosmetics and personal care products.

Below I have outlined the various chemicals found in personal care products and why you do not want to be putting them on your skin! There is quite a bit of detail here for those that are scientifically minded. If you are just keen to accept that you need to switch to natural products, skip to Section 3 to find out how.

# What is it: Parabens

Parabens are a class of widely used preservatives which are synthetically produced and used in cosmetic and pharmaceutical products. It is estimated that approximately 85% of personal care products contain parabens and that women are exposed to up to 50 mg per day [Source]. Their use has been strictly regulated in European-made cosmetics and current European legislation allows their use only in extremely weak concentrations however they are not regulated in the US or Australia.

## What to look out for:

### Common parabens include

- Benzyl-parahydroxybenzoic acid
- Butylparaben
- Butyl-parahydroxybenzoic acid
- Ethylparaben
- Ethyl-parahydroxybenzoic acid
- Isobutylparaben
- Isopropylparaben
- Methylparaben
- Methyl-parahydroxybenzoic acid
- Parahydroxybenzoate
- Parahydroxybenzoic acid
- Propylparaben
- Propyl-parahydroxybenzoic acid

## Where it is found

Parabens can be found in shampoos, lotions, shaving gels, personal lubricants, spray tanning solution, makeup and toothpaste.

## Why you need to be concerned

Parabens are known endocrine disruptors and xenoestrogens. Whilst it was once believed that parabens were not stored in human tissues, studies have proven the contrary with accumulation in living tissue shown to be real. Parabens have been shown to mimic the natural hormone oestrogen in the body thereby disrupting natural hormone processes in the body[39].

There have been several studies reporting adverse effects of parabens on female reproductive and endocrine function[40]. They have been linked to increased uterine growth in animals and to the proliferation of oestrogen-dependent human breast cancer cells[41]. A study done amongst women undertaking fertility treatment in Massachusetts found an association between higher urinary concentrations of propyl parabens and diminished ovarian reserves[42].

39 M.Soni et al., 'Safety assessment of esters of p-hydroxybenzoic acid (parabens),' Food Chem Toxicol vol. 43, no.7, pp.985–1015, 2005.
40 C.Taxvig et al., 'Do parabens have the ability to interfere with steroidogenesis?' Toxicol Sci, vol. 106, no.1, pp. 206–213, 2008.
41 J.Byford, 'Oestrogenic activity of parabens in MCF7 human breast cancer cells', J Steroid Biochem Mol Biol, vol. 80, no.1, pp.49–60, 2002.
42 K. Smith et al., 'Urinary paraben concentrations and ovarian aging among women from a fertility center. Environ Health Perspect. vol.121, pp.1299–1305, 2013.

Men are not immune to the effects of parabens. One in vitro study found that human sperm were not viable when exposed to parabens at concentrations of 1 mg/ml, a relatively small amount[43]. Conflicting results have also been reported in rats, with one study showing decreased sperm number and activity while another study found no adverse reproductive effects[44,45].

If the hormone disrupting effects of parabens are not enough to convince you stop using them, the beauty banishing effects may do! Studies indicate that methylparaben applied on the skin may react with UVB leading to increased skin ageing and DNA damage[46].

# What is it: Sodium Lauryl Sulfate

Sodium Lauryl Sulfate or SLS is a common ingredient in personal care products and industrial cleaners. It is an additive that allows cleansing products to foam. There are many natural and organic marketed products which contain sulfates which makes it so important to keep an eye out for this one on your ingredients lists.

### What to look out for:

SLS may also be listed as Sodium Laureth Sulfate, Sodium Lauryl Sulfate, Sodium Dodecyl Sulfate, Sodium n-Dodecyl Sulfate, A13-00356, Sulfuric Acid, Monododecy Ester, Sodium Salt, Sodium Salt Sulfuric Acid, Sodium Dodecyl Sulfate, Aquarex Me or Aquarex Methyl.

### Where it is found

SLS is present in most body washes, soaps, shampoos, toothpastes, mouth wash, laundry detergent, dishwasher detergent, stain remover, bubble bath, shaving cream. The International Journal of Toxicology also provides a safety assessment of SLS and recommends concentration levels of no more than 1% in products with prolonged use. This is disturbing when you consider a number of cleaning products have levels of SLS as high as between 10-20% and in extreme cases over 30%.

### Why you need to be concerned

Studies surrounding the toxicity of SLS are controversial with sceptics claiming they are overblown. However, The Environmental Working Group (EWG), a non-profit organization assessing the link between chemicals in our skincare and household cleaning products, have documented over 14,000 studies linking SLS to:

— Irritation of the skin and eyes;

— Organ toxicity;

— Developmental and reproductive toxicity;

— Neurotoxicity, endocrine disruption, ecotoxicology, and biochemical or cellular changes; and

— Possible mutations and cancer.

There are clearly grounds for concern regarding use of products containing SLS.

Protein denaturing is another concern regarding the use of products containing SLS. SLS exerts its effects on proteins by forming a chemical bridge between the fat-soluble and water-soluble parts of the protein molecule. This disrupts the hydrophobic forces needed to maintain the protein structure and the molecule collapses, rendering it useless.

The result of this is two-fold. Firstly, existing proteins are damaged, leading to an increase in the amount of healing required by the body and secondly, new proteins can be damaged and cells disrupted while they are under construction.

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43 B. Song et al., 'In vitro spermicidal activity of parabens against human spermatozoa,' Contraception, vol. 39, no.3, pp.31–5, 1989.
44 Kang KS, Che JH, Ryu DY, et al. Decreased sperm number and motile activity on the F1 offspring maternally exposed to butyl p-hydroxybenzoic acid (butyl paraben). J Vet Med Sci. 2002 Mar;64(3):227–35.
45 S.Oishi, 'Lack of spermatotoxic effects of methyl and ethyl esters of p-hydroxybenzoic acid in rats,' Food Chem Toxicol, vol.42, no.11, pp.1845–9, 2004.
46 O.Handa, 'Methylparaben potentiates UV-induced damage of skin keratinocytes,' Toxicology, vol. 227, no.1, pp.62–72, 2006

# What is it: Phthalates

Phthalates have been used as additives in industrial products since the 1930s, and are universally considered to be ubiquitous environmental contaminants. They are added to plastics to increase their flexibility, transparency, durability, and longevity. In cosmetics they are used as a plasticisers in products such as nail polishes (to reduce cracking by making them less brittle); in hair sprays (to help avoid stiffness by allowing them to form a flexible film on the hair) and as a solvent and fixative in fragrances.

### What to look out for

There is no easy way to tell if a product has added phthalates with labels rarely listing phthalates on the ingredients list. Phthalates can generally be identified on labels by a three or four letter acronym that defines their chemical structures. There are many types of phthalates, among them DBP (di-n-butyl phthalate), DEP (diethyl phthalate), DEHP (di-(2-ethylhexyl) phthalate or bis (2-ethylhexyl) phthalate), BzBP (benzylbutyl phthalate), and DMP (dimethyl phthalate).

### Where is it found?

You have probably heard that phthalates are commonly found plastic food and beverage containers, but it turns out their presence extends far beyond that. 95% of us have detectable levels of phthalates in our urine[47].

You'll find phthalates in many personal care products including perfume, hair spray, deodorant, fragranced products, nail polish, coloured cosmetics, soaps, lotions, aftershave, insect repellent. You will also find them in household products such as plastic containers, carpeting, vinyl flooring, shower curtains, detergents, lubricating oils, raincoats, plastic toys, and inside your car.

Phthalates are also detected in dairy possibly due to the plastic tubes used to milk cows and meat They have also been detected in water and in pesticides sprayed on conventional fruits and vegetables[48].

To avoid exposure to household exposure, see our tips on Environmental toxins below.

### Why you need to be concerned

There have been many studies which have shown the endocrine-disrupting effects of phthalates. I have discussed the main hormone disrupting effects as they relate to fertility however phthalates have been noted to have a wide-spread impact not only on fertility but diabetes and obesity and cancer.

Phthalates have been directly associated with a decrease in fertility levels. One study of 501 501 couples trying to become pregnant found that the men (but not women) with high phthalate concentrations experienced a 20% decline in fertility and took longer to get their partners pregnant than men with lower concentrations[49].

Phthalate exposure has been associated with lower testosterone levels in both males and females. A large and diverse cross-sectional study involving testing of phthalate urine metabolites and testosterone in 2,208 men, women and children found an inverse relationship between phthalate exposure and testosterone. The study found that those who had multiple phthalates in their blood experienced the most significant decline in testosterone and that the loss of testosterone was even more apparent at specific life stages. For boys between the ages of 6 and 12, exposure to di-(2-ethylhexyl) phthalate exposure was linked to a 24 to 34% drop in testosterone levels. Women experienced the greatest drop between ages 40 and 60 when their testosterone levels dropped 11 to 24%. John D. Meeker, lead author of this study quotes, "We found associations between markers of phthalate exposure and testosterone levels among multiple age groups and in both sexes, including children"[50].

47 P.Huang et al., 'Association between prenatal exposure to phthalates and the health of newborns,' Environment International, vol.35, pp.14-20, 2008.

48 S.Serrano et al., 'Phthalates and diet: a review of the food monitoring and epidemiology data,' Environmental Health, vol.13, no.1, 43, 2014

49 G.Louis et al., 'Urinary bisphenol A, phthalates, and couple fecundity: the Longitudinal Investigation of Fertility and the Environment (LIFE) Study,' Fertility & Sterility, vol.101, no.5, pp.1359-669, 2014.

50 J. Meeker and K. Ferguson, 'Urinary phthalate metabolites are associated with decreased serum testosterone in men, women and children from NHANES 2011-2012,' J Clin Endocrinol Metab, vol.99, no.11, pp. 4346-4352, 2014.

In women, phthalates have been linked to miscarriage with higher exposure linked to miscarriage between 5 and 13 weeks of pregnancy. One specific study of 300 women in China involved the testing of urine samples from 132 women who had miscarriages and 172 healthy pregnant women. They found pregnancy loss was associated with higher levels of urinary phthalate metabolites from diethyl phthalate (DEP), di-isobutyl phthalate (DiBP) and di-n-butyl phthalate (DBP)[51].

Of most concern, and the reason why I am so passionate about educating on toxin exposure, is that prenatal phthalate exposure may also have an impact on infant neuro-behavioural outcomes and the potential to alter androgen-responsive brain development in boys[52].

A link between phthalate metabolites and endometriosis risk[53], as well as BMI levels and waist circumference has also been shown[54].

# What is it: PEGs

Polyethylene glycol, better known by its acronym, PEG, isn't a single ingredient but a class of ethylene glycol polymers derived from petroleum. PEGs are followed by a number correlating to how many units of ethylene glycol they comprise, e.g. PEG-4 or PEG-100; the lower the number, the more easily the compound is absorbed into the skin. They are used in personal care products in three main ways: as emollients (which help soften and lubricate the skin), as emulsifiers (which help water-based and oil-based ingredients mix properly), and as penetration enhancers or carriers that help deliver other ingredients deeper into the skin.

### What to look out for:

You will see polyethylene glycol most often appear as PEG followed by a number which relates to the ethylene glycol units it is comprised of.

### Where is it found

PEGs are frequently found in lotions, body wash, shaving products, sheet masks, serums, cleansers, hair products, deodorant and makeup.

### Why you need to be concerned

The main concern associated with PEGs is their potential contamination with toxins. According to a report in the International Journal of Toxicology by the cosmetic industry's own Cosmetic Ingredient Review (CIR) committee, impurities found in various PEG compounds include ethylene oxide; 1,4-dioxane and heavy metals such as lead, iron, cobalt, nickel, cadmium, and arsenic. In spite of these known contaminants, PEG compounds remain commonly used in cosmetics and personal care products[55]. PEGs

Interestingly, 1,4-dioxane can be removed from cosmetics through vacuum stripping during the manufacturing process, however doing so is not mandatory and there is no way of knowing if it has actually been removed. In a study of personal care products marketed as "natural" or "organic" (uncertified), U.S. researchers found 1,4-dioxane as a contaminant in 46 of 100 products analysed[56].

PEGs also functions as a penetration enhancer so increases the uptake and permeability of the skin to product ingredients, both the good and harmful!

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51 D.Mu. et al., 'Levels of phthalate metabolites in urine of pregnant women at risk of clinical pregnancy loss,', Environ. Sci. Technol., vol. 49, no.17, pp. 10651–10657, 2015.

52 S.Swan et al., 'Prenatal phthalate exposure and reduced masculine play in boys,'Int J Androl. Vol. 33, pp. 259-269, 2005.

53 Upson K, Sathyanarayana S, De Roos AJ, Thompson ML, Scholes D, Dills R, Holt VL: Phthalates and risk of endometriosis. Environ Res. 2013, 126: 91-97.

54 R.Stahlhut et al., 'Concentrations of urinary phthalate metabolites are associated with increased waist circumference and insulin resistance in adult US males,' Environ Health Perspect. vol.115, pp .876-882, 2007.

55 W, Johnson, 'Cosmetic Ingredient Review Expert Panel. "Final report on the safety assessment of PEG-25 propylene glycol stearate, PEG-75 propylene glycol stearate, PEG-120 propylene glycol stearate, PEG-10 propylene glycol, PEG-8 propylene glycol cocoate, and PEG-55 propylene glycol oleate,' Int J Toxicol, vol.20 (Suppl 4):13-26, 2001.

56 OCA (Organic Consumer Association). Consumer alert. Cancer-causing 1,4-dioxane found in personal care products misleadingly branded as natural and organic. Available: http://www.organicconsumers.org/bodycare/DioxaneRelease08.cfm. 2008.

# What is it? Tricoslan

Tricolsan is a widely used antimicrobial chemical in personal care products. Tricoslan was banned by the FDA and Australian regulatory authorities in late 2016 on the basis that there was not enough information to prove it was effective and safe for long term use and was not actually effective as an antimicrobial agent. Despite this, it is still being used in many personal care products.

### What to look out for:

Tricoslan can be listed on ingredients lists as Tricoslon, Triclocarban, Microban, Irgasan, Lexol-300, Ster Zac, Cloxifenolum, Biofresh. Avoid purchasing products with antibacterial treatments whenever possible.

### Where is it found

Despite it being banned from hand sanitisers, tricoslan is still being used in products such as acne treatments, body washes, laundry detergents, deodorants Colgate Total toothpaste and some antibacterial dish soaps.

It is also added to many other products, including plastic toys, fabrics and plastic items marketed as "germ-killing" or "antibacterial," though it is not listed on their labels.

### Why you need to be concerned

A number of studies have shown tricoslan to be an endocrine disruptor, altering thyroid hormone function[57]. Triclosan shares a few key chemical similarities with triiodothyronine (T3), one of the primary hormones produced and regulated by our thyroid gland. This chemical similarity between triclosan and T3 is what is thought to create an issue with thyroid hormone levels. Several studies have demonstrated that exposure to triclosan produces a dose-dependent decrease in serum levels of both T3 and T4 thyroid hormones[58]. Maternal exposure to triclosan has also been shown to impair thyroid function in developing babies[59]. Whilst this research is predominantly based on animal studies and is hence discounted by many health authorities, the sheer number of studies and emerging human studies are enough to cause a concern.

In men tricoslan has been shown to interfere with the production of sperm health and testicular health in both human and animal studies[60]. A study by British researchers found that triclosan has estrogenic and androgenic hormone properties, with exposure potentially contributing to the development of breast cancer[61].

There are other ongoing studies that involve the safety of triclosan. One is a study investigating the potential of developing skin cancer after a long-term exposure to triclosan in animals. Another is a study on the potential breakdown of triclosan to other chemicals on human skin after exposure to triclosan to ultraviolet (UV) rays.

57 L. Zorril`la et al., 'The effects of triclosan on puberty and thyroid hormones in male Wistar rats,' Toxicological Sciences, vol. 107, no.1. pp. 56-64, 2009.
58 K. Crofton et al., 'Short-term in vivo exposure to the water contaminant triclosan: Evidence for disruption of thyroxine,' Environ Toxicol Pharmacol, vol. 24, no.2, pp.194-7, 2007.
59 P.Rodriguez and M.Sanchez, 'Maternal exposure to triclosan impair thyroid homeostasis and female pubertal development in Wistar rat offspring,'.Journal of Toxicology and Environmental Health, vol. 73, no.24, pp.1678-88, 2010.
60 Z.Lan et al., 'Triclosan exhibits a tendency to accumulate in the epididymis and shows sperm toxicity in male sprague-dawley rats,' Environmental toxicology, 2013.
61 R.Gee et al., 'Oestrogenic and androgenic activity of triclosan in breast cancer cells,' Journal of Applied Toxicology, vol. 38, pp. 78-91, 2008.

# What is it? Heavy Metals

Heavy metals including lead, aluminum, arsenic, nickel, beryllium, mercury, cadmium and nickel are common contaminants in personal care products. Some metals are intentionally added as ingredients, while others are contaminants.

In a study of heavy metals in 49 makeup products, conducted by The Environmental Defence, a Canadian environmental group titled "**Heavy Metal Hazard: The Health Risks of Hidden Heavy Metals in Face Makeup**", serious heavy metal contamination in virtually all of the products. The research group tested 49 different face makeup items, including five foundations, four concealers, four powders, five blushes or bronzers, seven mascaras, two eye liners, 14 eye shadows, and eight lipsticks or glosses for the presence of arsenic, cadmium, lead, mercury, beryllium, selenium, thallium and nickel. Their testing revealed:

— 96% contained lead

— 90% contained beryllium

— 61% contained thallium

— 51% contained cadmium

— 20% contained arsenic

Each product contained an average of two of the four metals of highest concern (arsenic, cadmium, lead, mercury), which are designated as toxic in Canada because of proven health concerns[62].

### What to look out for

Look out for ingredients listing lead acetate, aluminum, chromium, cadmium, thimerosal, hydrogenated cotton seed oil, sodium hexametaphosphate. Mercury may appear as mercurous chloride," "calomel," "mercuric," "mercurio," or "mercury". Colour pigments in makeup, labelled as FD& Cor D&C and followed by colour numbers e.g. FDC Red 4 FDC Red 1

### Where is it found

Deodorant, lip products, whitening toothpaste, skin whiteners/lighteners, eyeliner, nail color, foundations, sunscreens, eye shadows, blush, concealer, moisturisers, eye drops

### Why you need to be concerned

Below I highlight just some of the concerns around specific heavy metals.

**LEAD —**
Lipsticks and eye shadows are two of them main cosmetics that contain lead. Before I delve into some of the proven health concerns surrounding lead, it makes sense to highlight how profound it is in lipsticks despite not being a listed ingredient and there being no safe limit for it.

**A Poison Kiss.** Lead in lipstick was presumed an urban legend until 2007, when the Campaign for Safe Cosmetics released the report A Poison Kiss, with the results from an independent laboratory that tested 33 popular brands of lipsticks for lead content and found 61% of lipsticks contained lead, with none of these listing lead as an ingredient. One third of the tested lipsticks exceeded the US FDA's 0.1 parts per million limit for lead in candy – a standard established to protect children from directly ingesting lead[63].

An expanded FDA study in 2009 found lead in 400 lipsticks at levels up to 7.19 parts per million, however the FDA has found no reason to take action in limiting lead found in lipstick[64].

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62 Montreal Gazette May 16, 2011. Environmental Defence, Heavy Metal Hazard: The Health Risks of Hidden Heavy Metals in Face Makeup (PDF)

63 A poison kiss: the problem of lead in lipstick. 2007. The Campaign for Safe Cosmetics. Available at: http://www.safecosmetics.org/get-the-facts/regulations/us-laws/lead-in-lipstick/

64 N.Hepp et al., 'Determination of total lead in lipstick: development and validation of a microwave-assisted digestion, inductively coupled plasma–mass spectrometric method,' International Journal of Cosmetic Science, 2010, vol.32, p.233.

**We are in love with lipstick.** Our exposure to lipstick begins at a young age with 63% of girls aged ten and younger reportedly using lipstick[65]. A University of California Study found that women were re-applying lipstick from two to 14 times per day and on average at least two times a day, applying 10 mg of product at each application resulting in average daily use of 24 mg of lip products daily. Another series of studies study done in Europe found that the mean daily use of lipstick was 24.6 milligrams. So we are not only absorbing a significant amount of lipstick daily, we are doing this over the span of a lifetime which means that our exposure to lead and heavy metals is chronic and accumulates – something that hasn't been tested by safety authorities.

**Lead accumulates.** In the body, lead will either accumulate in tissues, especially bone, but also in the liver, kidneys, pancreas, and lungs. Pregnant women and young children are particularly vulnerable because lead can cross the placenta with ease and enter the fetal brain. Lead can also be transferred to infants via breastfeeding and lead stored in bone serves source of fetal lead exposure. After immediate exposure, humans are able to get rid of 50% cent of the lead within two to six weeks, but it takes 25 to 30 years to get rid of 50% cent of lead that has accumulated in the body over time.

**There is no safe level of lead.** There is no safe level of lead exposure. Lead is a neurotoxin and can be dangerous at small doses. Medical experts are clear that any level of lead exposure is unhealthy.

**Miscarriage.** Women with blood lead levels of 5-9 µg/dL were two to three times more likely to have a spontaneous abortion than were women with blood lead levels less than 5 µg/dL[66]. To put this into perspective, you may be able to absorb 0.3 µg of lipstick with one application of the highest lead containing lipstick. If you are using it multiple times a day and exposing yourself to other sources of lead via your environment and food supply, and given lead can accumulate in the blood stream there is a good reason to be avoiding lead wherever you can.

**Male Fertility.** Long-term lead exposure (independent of current lead exposure levels) may also diminish sperm concentrations, total sperm counts, and total sperm motility

**Early Cognitive Development.** Prenatal lead exposure even at low levels has been linked in several studies to delayed early cognitive development and behavioural problems[67].

**MERCURY —**

According to the Environmental Working Group's Skin Deep database, mercury is a possible impurity in 1.9% cent of products, including lip gloss, lip liner, eye liner, brow liner, moisturizer, mascara, baby lotion, lipstick, and eye shadow, skin lightening and anti-ageing products. It is also found in high levels in fish.

Whilst the amounts of mercury in the cosmetics is typically low, it is readily absorbed through the skin and accumulates in the body. Combined with mercury from other sources it can be problematic when it comes to the reproductive system along with the nervous system.

**CADMIUM —**

Cadmium, detected in eyeshadows, lip gloss, eyeliner and makeup has been shown to impact fertility. One study examining the impact of cadmium blood concentrations on fertility. included 501 couples in Michigan and Texas who were trying to conceive. The couples were followed for up to one year, or until pregnancy was confirmed. Using statistical measurements of the participants' blood concentration of the metals, the investigators found that, in the women, the probability of pregnancy was reduced by 22% with each increase in the blood cadmium concentration.

**ARSENIC —**

Found in eye shadow along with skin bleaching creams and our drinking water. Arsenic and its inorganic compounds are considered to be "toxic" and "carcinogenic to humans" by the International Agency for Research on Cancer (IARC). Long-term skin contact is not likely to lead to any serious internal effects however ingestion of water high in arsenic is what is more of a concern.

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65 Mintel Reports: USA, Lifestyles: Teen Consumer - US - December 2004 quoted in http://www.breastcancerfund.org/site/pp.asp?c=kwKXLdPaE&b=1264315

66 A.Borja. 'The evidence that lead increases the risk for spontaneous abortion,' Am J Ind Med, vol.38, no.3, pp.300 -9, 2000.

67 Y. Kim, 'Longitudinal analyses of prenatal and postnatal lead exposure and early cognitive development. Prenatal lead and cadmium co-exposure and infant neurodevelopment at 6 months of age: the Mothers and Children's Environmental Health (MOCEH) study,' Neurotoxicology, vol.35, pp.15-22, 2013.

**ALUMINUM —**

Exposure to aluminum is now being considered a significant factor in falling sperm counts and reduced male fertility. One specific study examining the aluminum content of sperm found a significant inverse relationship between the aluminum levels and sperm count[68].

In females, long term aluminum exposure has been linked to reduced fertility rates[69] and is speculated to be linked to breast cancer.

Aluminum is most commonly found in makeup and anti-perspirants but can also be absorbed via your household pots and pans. Use of steel utensils on aluminum cookware can cause additional toxicity by scraping aluminum into food. Beer and soft drink cans are made exclusively from aluminum. Many common antacids, such as Gaviscon also contain aluminum.

# What is it: Talc

Talc (Magnesium Silicate) is a mineral, produced by the mining of rocks containing magnesium, silicon, oxygen, and hydrogen and then processed by crushing, drying and milling.

### Where is it found

Talc is used for its anti-moisture properties in baby powder, make up, medicated powders, feminine hygiene products, lotions, body and shower products and deodorants. Additionally, it is used as a filler in various powder cosmetics, such as foundations and eyeshadows.

### What to look out for:

Talc appears simply as talcum powder, cosmetic talc or talc.

### Why you need to be concerned

Frighteningly, talc is related to the potent carcinogen asbestos. Responding to the evidence that talc particles have dangerous similarities to asbestos, the FDA drafted a resolution that would limit the amount of asbestos-like fibers in cosmetic grade talc. However, no ruling by the FDA or TGA has ever been made and today, cosmetic grade talc remains non-regulated by the US and Australia[70]. Interestingly, the European Union has restricted the use of talc[71].

Talcum powder has been strongly linked to ovarian cancer which is now the fourth most common fatal cancer in women after breast, colon and lung cancer[72]. As early as 1992, a publication in Obstetrics and Gynecology reported information that frequent talc use on the genital area increases risk of ovarian cancer threefold – based on information that was already a decade old[73].

# What is it: Formaldehyde

In its chemical form formaldehyde is a colourless, strong-smelling gas used in a wide range of industries and products including building materials, walls, cabinets furniture and of course personal care products. In personal care products formaldehyde helps to prevent microbes from growing in water-based products. It can be added directly to personal care products, or more often, it can be released from preservatives such as quaternium-15, DMDM hydantoin, imidazolidinyl urea, diazolidinyl urea, polyoxymethylene urea, sodium hydroxymethylglycinate, bromopol and glyoxal.

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68 P. Klein et al., 'Aluminum content of human semen: implications for semen quality,' Reproductive Toxicology, vol.3, 2014.

69 N.Wang et al., 'Effect of sub-chronic aluminum exposure on the reproductive function in female rates,' Biological Trace Element Research, vol 145. no.3, pp. 382-387, 2011.

70 R.Gordon et al., 'Asbestos in commercial cosmetic talcum powder as a cause of mesothelioma in women,' International Journal of Occupational and Environmental Health, vol.20, no.4, pp.318-332, 2014.

71 European Commission. Annex III. Available online: http://ec.europa.eu/consumers/cosmetics/cosing/index.cfm?fuseaction=search.results&annex_v2=III&search - See more at: http://www.safecosmetics.org/get-the-facts/chemicals-of-concern/talc/#_edn36

72 M.Merrit et. al., 'Australian Cancer Study (Ovarian Cancer), Australian Ovarian Cancer Study Group. Talcum powder, chronic pelvic inflammation and NSAIDS in relation to risk of epithelial ovarian cancer,' Int. J. Cancer, vol. 122, pp. 170-176, 2008.

73 B. Harlow et.al., 'Perineal exposure to talc and ovarian cancer risk,' Obstet Gynecol, vol.80, no.1, pp.19-26, 1992.

### Where is it found

Exposure to formaldehyde comes predominantly from nail products. Nail polish, nail hardeners, nail glue and nail salons provide high levels of exposure. Other common cosmetic sources include eyelash glue, hair products, baby shampoo, body soap, body wash and colour cosmetics. Household products including adhesives, disinfectants, new pressed wood products and new carpets are also common sources. We can also breathe in formaldehyde from nail salons, open fires, tobacco, gas cookers and exhaust fumes.

### What to look out for:

Formaldehyde is often listed on ingredient labels as: quaternium-15, DMDM hydantoin, imidazolidinyl urea, diazolidinyl urea, polyoxymethylene urea, sodium hydroxymethylglycinate, bromopol, glyoxal, 2-bromo-2-nitropane-1 and 3-diol.

### Why you need to be concerned

Whilst there are over 29 studies showing the adverse effects of formaldehyde exposure on pregnancy outcomes, some authorities advocate that environmental exposure is unlikely to reach the reproductive system in concentrations sufficient to cause damage. Below I provide evidence which proves this is not in fact the case.

— **Human carcinogen.** The International Agency for Research on Cancer classifies formaldehyde and formaldehyde releasing ingredients as human carcinogens.

— Banned in some jurisdictions. In the UK, the levels of formaldehyde in water are regulated by law. There are particular limits set for workplaces where formaldehyde is manufactured or used. The European Union (EU) also has rules on the maximum levels of formaldehyde and formaldehyde releasers in cosmetic products. If a product contains more than the safety guidelines specify, the bottle must carry the warning "contains formaldehyde" and list it in the ingredients on the label. In the US, the recommended maximum level of formaldehyde is the same as in the EU. However, bottles don't have to carry a warning if this level is exceeded.

— **Spontaneous abortion.** Formaldehyde exposure has been associated with a higher risk of miscarriage. In one specific study of female cosmetologists who are often exposed to a variety of chemicals including formaldehyde, it was found that full-time cosmetologists who used formaldehyde-based disinfectants had a 2.1-fold higher risk of spontaneous abortion (miscarriage) than those who did not use formaldehyde-based disinfectants[74]. French hospital workers also exposed to formaldehyde solution has a higher risk of miscarriage[75]. Whilst these studies are specifically on industry workers more likely to be exposed to formaldehyde, the risk of abortion from heightened exposure to formaldehyde cannot be ignored.

— **Delayed conception.** Levels of formaldehyde exposure in both men and women has been linked to a higher rate of miscarriage. In a study conducted of 300 men exposed to formaldehyde it was found that the wives of formaldehyde-exposed men took nearly three times longer to fall pregnant than the wives of men not exposed to formaldehyde. Formaldehyde exposure in this study was also associated with a higher rate of miscarriage (spontaneous abortion) with women whose husbands were exposed to formaldehyde being twice as likely to miscarry[76].

— **Impact on Foetal Development.** Maternal exposure to formaldehyde has been linked to an increased risk of low birth weight and the risk of preterm birth[77].

74 E.John et al.,'Spontaneous abortions among cosmetologists,' Epidemiology, vol.5, no.2, pp. 147-55, 1994

75 M.Saurel-Cubizolle et al., 'Work in operating rooms and pregnancy outcome among nurses,' Int Arch Occup Environ Health vol.66, pp.235–241, 1994.

76 W.Hai-xu et al., 'Effects of paternal occupation exposure to formaldehyde on reproductive outcomes,' Journal of Occupational and Environmental Medicine, DOI: 10.1097/JOM.0b013e31824e6937, 2012.

77 L.Maroziene, L and R.Grazuleviciene,, 'Maternal exposure to low-level air pollution and pregnancy outcomes: a population based study. Environmental Health, Vol. 1 (6)

# What is it? Fragrance or Parfum

Used to produce a pleasant scent, the term "fragrance" or "parfum" on a cosmetic ingredient list usually hides a complex mixture of hundreds of chemicals. Some 3,100 chemicals are used as fragrances[78].

Fragrances were historically treated as luxury items for use only on special occasion and had been derived from natural ingredients and essential oil. Chanel changed the fragrance industry in 1921 when Chanel No.5 was introduced to consumers. The formula used aldehydes and other synthetics to provide greater stability and consistency at a lower cost. And with this creation, synthetic fragrances became a part of daily life.

### Where is it found?

Fragrances are not just found in perfumes, they assail our bodies from multiple sources including most skincare, body sprays, after-shave, shaving products, toothpaste, mouthwash, shampoos, conditioners, deodorant, body washes, sunscreen air fresheners, perfumed candles, deodorisers, room fragrances, laundry soaps and fabric conditioners, household cleaning products and polishes.

### What to look out for:

Look out for the terms fragrance, perfume, parfum, essential oil blend or aroma.

### Why you need to be concerned

Whilst all ingredients found in skincare and cosmetics need to be labelled on ingredients, fragrances are considered trade secrets with makers allowed to withhold fragrance ingredients. Fragrance ingredients may be derived from petroleum or natural raw materials. In addition to "scent" chemicals that create the fragrance, perfumes and colognes also contain solvents, stabilizers, UV-absorbers, preservatives, and dyes. These additives are frequently, but not always, listed on product labels. A report by the National Academy of Sciences reports that 95% of the chemicals used in synthetic fragrances are derived from petroleum and include benzene derivatives, aldehydes and many other known toxins and synthesizers capable of causing cancer, birth defects, central nervous system disorders and allergic reactions.

In 2010, the Campaign for Safe Cosmetics and the Environmental Working Group funded a study, where 17 popular fragrances were analysed for their real ingredients. They found in total 38 secret chemical substances in the fragrances tested with every product containing on average up to 14 undisclosed chemical substances, which are either recognised endocrine disruptors, allergens, carcinogens or have hardly ever been tested for their safety.

# Petroleum & Mineral Oils

### What is it?

Mineral oils are essentially an oil that is made from petroleum as a by-product of the distillation of petroleum to produce gasoline. It is therefore an inexpensive filler ingredient for in various skincare and personal care products.

### Where is it found?

Mineral oils and petroleum are common ingredients found in lotions, creams, ointments, and cosmetics (especially concealers, foundations and eye shadows). Baby oil and Petroleum Jelly are two common products containing mineral oils and petroleum.

### What to look out for:

Look out for products containing mineral oil, petrolatum, liquid paraffin and paraffin oil.

78 IFRA Ingredients. Available online: http://www.ifraorg.org/en-us/ingredients#.VW-Cdc-6eUk. 2015

### Why you need to be concerned

**Bio-Accumulation.** Mineral oils cannot be readily metabolised by the body and have been found to accumulate in human fat tissue over time. A study conducted by the Journal of Women's Health analysed the correlation between mineral oil saturated hydrocarbons (MOSH) and the nutrition habits and use of cosmetics in 142 breastfeeding women by analysing their breast milk and subcutaneous tissue removed fat removed during their caesarean procedure[79]. The results showed the presence of MOSHs and a correlation between age and MOSH concentration suggesting there is an accumulation of mineral oils in human tissue with age. Use of sunscreen during pregnancy and the use of hand cream and lipstick were also found to be determinants of MOSH contamination of fat tissue which would suggest cosmetics are a relevant source of contamination. The researchers concluded that: "There is strong evidence that mineral oil hydrocarbons are the greatest contaminant of the human body, amounting to approximately 1g per person."

**Hormonal Imbalances.** Petroleum based products are classified as xenoestrogens. Studies have shown that these compounds have endocrine-disrupting potential, acting via oestrogen hormone receptors to either block receptors or potentiate the effect of oestrogen[80].

**Potential Carcinogens.** 1,4 dioxane is an impurity found in 22% of mineral oil products[81]. This is a known carcinogen and as mentioned previously is a by-product of the manufacturing process so will not be shown up on an ingredient's list. Whilst refined mineral oil (that used in cosmetics) differs in purity to unrefined mineral oil products used in industry, there is still a cause for concern. One particular study conducted on mice exposed to UVB rays and then treated with mineral oil rich lotions were shown to display an increased rate of tumour growth[82]. The mice which had been pre-exposed to UVB received a topical application of 100 mg of mineral-oil reach cream once a day, five days a week for 17 weeks experienced an increased rate of of tumour formation. Whilst this study was conducted on mice with very different skin characteristics to humans, the association undoubtedly indicates a cause for concern.

## Benzophenone (Oxybenzone)

### What is it?

Benzophenone-3, or oxybenzone, primarily functions as a photo stabilizer and sunscreen. Benzophenone-3 is classified as a "chemical" sunscreen agent. Ibenzophenone-3 absorbs UVB and short UVA rays. By absorbing UV rays, it also helps preserve the integrity of other cosmetic ingredients, preventing their deterioration under the sun.

### Where is it found?

Most commonly found in sunscreen but also in lip balms, nail polish, hair spray, foundations and lipstick.

### What to look out for:

Look out for ingredients containing the word benzophenone (e.g. benzophenone-2), BP# (e.g. BP2), oxybenzone, sulisobenzone, sulisobenzone sodium. Related ingredients in sunscreens that have similar concerns include concerns have been expressed for related products including avobenzone, octisalate, octocrylene, homosalate, and octinoxate. Choose sunscreens that rely on non-nano zinc oxide or titanium dioxide. The Edible Beauty **Basking Beauty Natural Sunscreen** is an SPF50 sunscreen with non-nano zinc oxide.

79 N.Concin et al., 'Evidence for cosmetics as a source of mineral oil contamination in women,' J.Women's Health, vol.20, no.11, pp.1713-9, 2011.

80 C.Vrabie et al., 'Specific in vitro toxicity of crude and refined petroleum products: II. Estrogen (alpha and beta) and androgen receptor-mediated responses in yeast assays,' Environ Toxicol Chem., vol.29, no.7, pp.1529-36, 2010.

81 EWG. 2007. EWG Research Shows 22 Percent of All Cosmetics May Be Contaminated With Cancer-Causing Impurity. Available from: http://www.ewg.org/news/news-releases/2007/02/08/ewg-research-shows-22-percent-all-cosmetics-may-be-contaminated-cancer

82 Y.Lu et al., 'Tumorigenic effect of some commonly used moisturizing creams when applied topically to UVB-pre-treated high risk mice,' The Journal of investigative Dermatology, vo.129, no.2, pp.468-475, 2009.

### Why you need to be concerned

**Bio-Accumulation.** Studies show that oxybenzone penetrates the skin. A study of 2,800 Americans, age 6 and up by the US Centre for Disease Control (CDC) Americans showed that oxybenzone readily absorbs in almost all study participants (97% showed the presence of oxybenzone). Typically, women and girls were shown to have higher levels than men and boys, likely a result of differences in use of body care products including sunscreens[83].

**Hormone Imbalances.** Studies on cells and laboratory animals indicate that oxybenzone and its metabolites may disrupt the hormone system. It has been documented to have weak oestrogenic and anti-androgenic effects[84,85].

Interestingly one study of the application of three sunscreen active ingredients (oxybenzone, 4-MBC, and octinoxate) suggested a minor, intermittent, but statistically significant drop in testosterone levels in men during just a one-week application period[86].

**Infertility.** Further to the studies noted above, higher levels of oxybenzone in men have been linked to delays in successful pregnancies. One specific study tracked 500 couples from both Michigan and Texas who were trying to become pregnant between 2005-2009. Men with higher levels of BP-2 and a 30% lower chance of impregnating their partners then BP-2 depleted men. Additionally, in couples where the man had higher levels of absorbed 4-OH-BP (a metabolite of oxybenzone), a delay to pregnancy was noted[87].

83 A. Calafat et al., 'Concentration of the sunscreen agent, benzophenone-3, in residents of the United States: National Health and Nutrition Examination Survey 2003-2004', Environmental Health Perspectives, available online March 21, 2008.

84 Y.Nakagawa and T.Suzuki, 'Metabolism of 2-hydroxy-4-methoxybenzophenone in isolated rat hepatocytes and xenoestrogenic effects of its metabolites on MCF-7 human breast cancer cells,' Chem Biol Interact, vol. 139, no.2, pp. 115-128,2002.

85 R, Ma et al., 'UV filters with antagonistic action at androgen receptors in the MDA-kb2 cell transcriptional-activation assay,' Toxicological Sciences, vol. 74, no.1, pp. 43-50, 2003.

86 N.Janjua et al., 'Systemic absorption of the sunscreens benzophenone-3, octyl-methoxycinnamate, and 3-(4-methyl-benzylidene) camphor after whole-body topical application and reproductive hormone levels in humans,' Journal of Investigative Dermatology, vol.123, no.1, pp.57-61, 2004.

87 M.Germaine et al., 'Urinary concentrations of benzophenone-type ultraviolet radiation filters and couples'' fecundity,' Am J Epidemiol, vol.180, no.12, pp. 1168-1175, 2014.

# Section Four — How to switch to natural beauty

I recommend that you try to avoid the products that contain the above toxins at least 80% of time, or whenever it is within your control. Start with the products you are using most frequently, for example your cleanser, lotion, lipstick and foundation. As you finish products, replace them with non-toxic alternatives and before you know it you will have a kit of natural and beautiful toxin-free personal care products. You will delight in finding natural and equally effective products by reputable companies!

When it comes to skincare, I go by the "edible" standard. If it is not good enough to eat, then I recommend you think twice about putting it on your skin.

# Here are a few tips to help you evaluate your beauty products.

— **Edible purity.** When it comes to skincare, I go by the "edible" standard. If it is not good enough to eat, then I recommend you think twice about putting it on your skin. Edible Beauty Australia avoids all endocrine disrupting hormones.

— **Step by step.** Do not feel like you have to throw away everything you own, just because you have finally learned how to decode the ingredient list of your favourite beauty products. Replace products as you use them up. Replace products that you use daily and on wide areas of your face/body (body lotion/moisturiser/ foundation) first, while small products that you only use on special occasion (bright lip colour, eyeliner etc.) can wait a little longer. This way you won't break the bank either. If you have babies or children replace their products pronto!

— **Samples are your best friend.** Everyone's skin is different. What works wonders for one, does not suit another. You will always have to try products for yourself. Especially when it comes to changing your skincare and foundation, it's a good idea to try before you buy. Most companies are happy to provide samples either free or for a small fee. You can save yourself a lot of $$$ and hassle by sampling.

— **Research, research, research!** It is always helpful to read reviews online (but keep in mind everyone is different so you do need to try things for yourself to know if it is right for you). You can get a general idea of the strengths and weaknesses of a product and also read through the ingredients. Try to only research one product group at a time, to not get overwhelmed. There are many great online stores that have selected products that are safe and truly natural. Many cities have exclusive green beauty stores as well with experts who can help guide you to make the right choices.

— **Don't give up.** Just because you have tried a natural product and it has not worked for you, or you even got an allergic reaction or had any other bad experience: do not give up on it altogether. I am under no illusion that there are many natural beauty products out there that are simply not great. This is the same for conventional products. It sometimes takes some time to find the perfect product that you love to the moon and back. I had to try several natural deodorants and had many bad experiences before I found "the one". The same goes for finding the right foundation. There are many incredible products out there and it's worth looking for them!

— **Beware of greenwashing.** Last but not least, there is also a lot of "greenwashing" going on. This means that many companies try to market their products to be natural or organic and use misleading terms to make you think that their products are natural, when really they are not at all. You can avoid this trap by knowing your ingredients, looking for trustworthy certifications or buying from stores that you trust.

# Section Five —
# How to detoxify your home

Most of us are conscious of the products that we are putting both on and in our bodies. However, cleaning products can often fly under our “awareness” radar despite being capable of causing significant harm to our health. In fact, the Environmental Protection Agency (EPA) indicates that the air inside our homes can be as polluted as the air outside, with a significant amount of pollution coming from our household cleaning products. Here I share some insight into why “detoxing” your cleaning products is critical to your health and that of your family and provide a few easy alternatives to get you going on a toxin-free cleaning regime!

Many of us have been raised in family homes where bleach, ammonia, caustic soda and harsh disinfectants were considered the gold standard for hygienic cleaning. A bathroom was not considered "clean" unless a significant amount of bleach and disinfectant had been liberally applied. I was raised in one of these families and subscribed to this model until conducting a little more research on the harmful effects of such products.

# Toxins to avoid in your cleaning products

**Oven cleaner:** May contain Iye (causes severe burns), butany, ethylene glycol, sodium hydroxide, methylene chloride, monoethanlamine. **Use baking soda instead.**

**Washing and laundry detergent:** May contain fragrance, quatemium-15, diethanolamine, ethylene oxide, bleach, phosphates, EDTA, benzoxazolyl, petroleum distillates. **Refer to our post for alternatives.**

**Carpet cleaner:** May contain perchloroethylene, naphthalene, fragrances, 2-Butoxyethanol. **Use castile soap, water and peppermint essential oil.**

**Bench top spray:** May contain Quaternary Ammonium Compaounds, ammonia, 2-Butoxyethanol, SLS, fragrances, tricoslan. **Use vinegar, castile soap and essentials oils.**

**Floor cleaner:** May contain Methoxydiglycol, Quaternary Ammonium Compounds, 2-Butoxyethanol, SLS, ammonia, fragrances, tricoslan. **Use vinegar, castile soap and essential oils.**

**Bathroom disinfectant:** May contain propylene glycol, 2-propanol, bleach, SLS, triethanolamine, chlorine, ammonia, fragrances. **Use vinegar or baking soda.**

**Glass spray:** May contain ammonia, phthalates, glycol theres, fragrances, 2-butoxyethanol. **Clean glass and mirrors with diluted vinegar and newspaper.**

**Hand soap:** May contain tricoslan, sulfates, triclocarbon, parabens, DEA, ureas, fragrances. **Use castile soap.**

**Toilet gel:** May contain ethyl alcohol, sodium hydroxide, oxalic acid, ammonia, chlorine, SLS, PEG-150, fragrances, lysol. **Use vineger and baking soda. See blog post for more details.**

**Mould remover:** May contain bleach, chlorine, ammonia, fragrances. **Use vinegar and essential oils such as clove and grapefruit seed extract.**

**Air refresher:** 350 chemicals and allergens have been detected in air fresheners including PEG-40, phthalates, 1.4-dichlorbenzene. **Use baking soda to absorb odours and natural products such as Ecologic Air Freshener.**

# Relaxed regulation

Regulation is relaxed when it comes to cleaning products. About 40,000 individual chemicals are permitted for use in consumer products and environmental experts indicate that the average household contains over 60 toxins.

When I started conducting research on the contents of common cleaning products, I was shocked to find that ingredients lists were often non-existent. In Australia, cleaning products are not required to disclose a full list of their ingredients, just the hazardous ones which are regulated by the Therapeutic Goods Administration (TGA). In the USA, there is a similar lack of disclosure and oversight by industry regulation.

Furthermore, products can be released to the market without any sort of safety standard, testing data or notification. There is in general a lack of research focused on the long-term health consequences of chronic exposure to the chemicals in cleaning products which stems from a lack of federal regulation requiring safety tests and setting legally binding upper limits on toxic ingredients and impurities.

### Why you need to be concerned?

A United Nations Report published in 2016 called for more research into the long-term effects of endocrine disrupting chemicals (EDCs) and listed household cleaners as a possible concern. This toxic body burden is the Environmental Working Group (EWG)'s chief concern about household chemicals. Rebecca Sutton, a senior scientist at the EWG explains:

"Our concern is daily, weekly, chronic exposure over a lifetime. Maybe if you're exposed to a chemical a handful of times it wouldn't cause harm, but some chemicals build up enough or cause enough harm in your body over time that it triggers some kind of disease outcome. The concept [of body burden] is that pollution is not just in our air and in our water — it's also in us."

A 2010 study conducted by the New York State Department of Health that analysed maternal occupation and 45 types of birth defects indicated that children born to women working as building custodians have a significantly increased risk of certain congenital deformities[88]. Borax, a common ingredient used to stabilise enzymes in laundry and dishwashing detergents, is considered toxic to human reproductive development systems, according to the European Union[89]. Men working in boric acid-producing factories have a greater risk of decreased sperm count and libido.

### Ingredients to look out for

- **Chlorine** – found in toilet bowl cleaners, mildew removers, laundry whiteners and even household tap water. Acutely, it is a respiratory irritant whilst chronic exposure can cause serious thyroid disruption.
- **Ammonia** – found in polishing agents for bathroom metal fixtures, sinks, and glass cleaners. Ammonia is a powerful irritant and when frequently inhaled is linked to chronic bronchitis and asthma.
- **Phthalates** – found in fragranced household products (and skincare). This ingredient will not be found on a label but will be listed as a fragrance or "parfum". Phthalates are known endocrine disruptors and have been linked to reduced male fertility.
- **Tricoslan** – found in liquid dishwashing detergents and hand soaps. Tricoslan can promote the growth of drug resistant bacteria. Also being investigated as a possible carcinogen and endocrine disruptor.
- **Quarternary Ammonium Compounds, or "QUATS"** – found in fabric softener liquids and sheets, most household cleaners labelled "antibacterial." Linked to respiratory disorders and known skin irritants.
- **Sodium Hydroxide** – found in oven cleaners and drain un-blockers. This ingredient is extremely corrosive and can cause severe burns upon exposure.
- **2-Butoxyethanol** – found commonly in window, kitchen and multipurpose cleaners.

88 M. Herdt-Losavio et al., 'Maternal occupation and the risk of birth defects: an overview from the National Birth Defects Prevention Study,' Occupational and Environmental Medicine, vol. 67, no.1, pp. 58-66, 2010.

89 ECHA (European Chemicals Agency). 2011. Classification and Labelling Inventory Database. echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database.

# Reading cleaning product labels — Red flag warning signs

Seeing any of the below words or phrases on your cleaning products should be a red flag for high toxicity. Note that greenwashing is rampant when it comes to consumer products. Words such as natural, green, organic, biodegradable and CFC-free are not necessarily indicative of a product's purity so look a little more closely at these products to confirm their safety.

— Poison, Warning, Danger. These words are clearly indicative of toxic formulas.

— Flammable or combustible. These warnings indicate the presence of dangerous solvents and other volatile organic compounds.

— Instructions to use the product in a ventilated room or warning of allergic reactions. This indicates that exposure may be capable of causing respiratory irritation or allergic reactions.

— Skin irritation warnings can indicate potential skin irritants or hazards.

— Generic terms like "surfactants" or "dispersal agents" may be a disguise for toxic ingredients.

— **Look at ingredients lists carefully. Common unsafe ingredient tip-offs, include:**

- Ingredients ending in "-ol" or "-ene," like benzol or toulene, which usually indicates toxic solvents.
- The presence of "chlor" in an ingredient name, this typically indicates a toxic chlorinated compound.
- The presence of "glycol" as part of a name, often points to a petroleum-based ether.
- Ingredients containing "phenol," can point to the use of coal tar derivatives.

Words such as natural, green, organic, biodegradable and CFC-free are not necessarily indicative of a product's purity

# Do it yourself cleaners

When it comes to do it yourself cleaners, you can create highly effective cleaning products with products you already have in your home. White vinegar, baking soda, Castile soap and essential oils are all that is required for a squeaky natural clean.

— Basic sink cleanser — Combine ½ cup baking soda with six drops essential oil (such as lavender, rosemary, lemon, lime or orange). Rinse sink well with hot water. Sprinkle combination into sink and pour ¼ cup vinegar over top. After the fizz settles, scrub with a damp sponge or cloth. Rinse again with hot water. (From The Naturally Clean Home, by Karyn Siegel-Maier.)

— Toilet bowl cleaner – Mix 2 cups of water, 3 tablespoons of baking soda, 1/3 cup of Castile soap and 25 drops of essential oils. Mix the water and baking soda together to combine. Then add the liquid soap and essential oils. Funnel into an empty spray bottle. To use spray onto toilet bowl and seat. Leave for five minutes then brush the bowl. Use white vinegar for extra disinfecting properties.

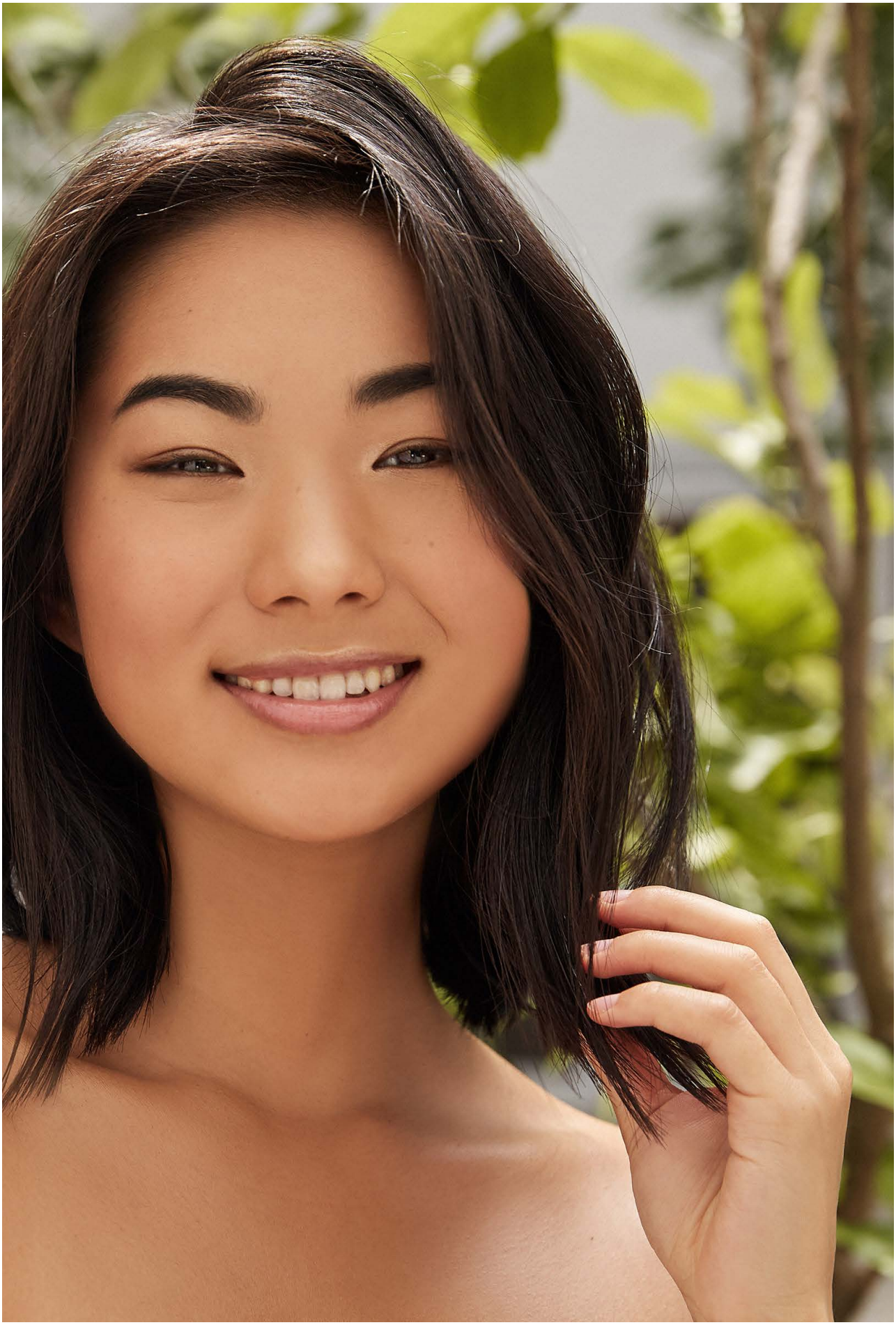
— Oven cleaner — Put a heatproof dish filled with water in the oven. Turn on the heat to let the steam soften any baked-on grease. Once the oven is cool, apply a paste of equal parts salt, baking soda, and white vinegar, and scrub. (From Super Natural Home, by Beth Greer.)

— Bathroom mildew remover — An effective mould spray can be made with 2 cups of water and 1/4 teaspoon each of tea-tree and lavender oil. Shake first and spray on trouble spots. The oils break down the mildew so there's no need to wipe it down. (From Green Interior Design, by Lori Dennis.). I am also a huge fan of clove oil for breaking down mould and killing spores. Add a ¼ teaspoon into the mix if you are experiencing mould.

— Laundry soap — Try "soap nuts" made from the soapberry tree. These are incredibly efficient and environmentally friendly as they are reusable. They come in a cotton sack that goes into the washing machine with clothes. You will never need laundry detergent again.

— Dusting — Furniture polishes are not necessary when you have olive oil which makes a fine polishing agent and micro fibre cloths which capture dust more efficiently than regular dusting cloths.

Achieving hormonal balance and luminous skin can be achieved by adhering to simple, evidence-based steps that address your health and beauty from the inside and out. I do hope this book has provided you with the information you need to improve your fertility and achieve a healthy and beautiful pregnancy. If you have any questions or feedback, or a successful conception (!) please do email me at anna@ediblebeautyaustralia.com



EDIBLE BEAUTY

AUSTRALIA