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Feature Article

Nutraceuticals, Nutricosmetics & Collagen Drinks Science or Snake Oil?

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Science or Snake Oil?

The term nutraceuticals is said to have been coined by Dr. Stephen L. DeFelice, the founder and chairman of the Foundation of Innovation Medicine in 1989. It describes the fusion between the words 'nutrition' and 'pharmaceuticals' as a name for products derived from food sources to promote health, prevent chronic diseases, delay the ageing process, improve life expectancy or support the structure and function of the body.

This terminology is similar in nature to 'cosmeceuticals' which as we know encapsulates 'cosmetic' and 'pharmaceuticals' and is used to describe the many topical skin creams available which have a noticeable effect on the appearance of the skin.

Honing the definition yet further has seen analysts come up with the concept of nutricosmetics – a hybrid between cosmeceuticals and nutraceuticals – which refers to oral products, generally derived from natural ingredients which are aimed at combating oxidative stress and inflammation and renewing or supplementing nutrients and elements within the body to promote healthy skin.

The main products within the nutricosmetics sector are so-called collagen drinks.

Like cosmeceuticals, nutraceuticals and nutricosmetics in the forms of orally ingested capsules or liquid beverages, are not subject to the same kind of regulations and testing as pharmaceutical drugs before they can be commercialised and sold to the public.

Critics claim that the sector is no more than 'yet another marketing gimmick', which can't beat the nutritional benefits provided by a healthy and balanced diet and lifestyle; but with more and more products now entering the marketplace, and many specifically aimed at anti-ageing claims, is there any science to back it all up to silence these critics?

In this article I'll look at some of the key products currently being marketed to the aesthetic industry, the clinical data behind them and some industry opinions on them, plus I'll be sharing my *Editor's View* on the taste and 'treatment' regimes involved, having sampled them myself.

Oral Supplementation

Dietary supplements or added vitamin and mineral formulations have been common place in high street chemists, health food stores and supermarkets for years, aimed at everything from supplementing the necessary vitamins for healthy children, pregnant and menopausal women to targeting ailment specific symptom relievers for joint pain and the like.

This new breed of nutritional supplements, the nutraceuticals/nutricosmetics and collagen drinks may carry some science forward from medical applications, but they are firmly pitching themselves at the health and wellbeing associated with anti-ageing and improved results in skin texture and tone. Anti-ageing or beauty from within.

The Ingredients

There are many building blocks which form the foundations of good skin including collagen, elastin and hyaluronic acid, all of which are lost as we age, hence the desire to seek ways to supplement them. Similarly other components are needed to prevent the onslaught of damage that our skin faces daily, such as anti-oxidants to fight against free radicals and oxidative stress.

All of the nutricosmetic products on the market contain some of these building blocks, but all in differing formulations and quantities, and all keen to tell you why their formula is the best! This has led to much debate over the efficacy of some of the products available, both in general terms and for their specific formula.

Collagen

The word collagen perfectly describes its function, coming from Greek and meaning 'glue producing'!

As we know, collagen is one of the most abundant proteins in the human body. As the main component of connective tissue it is found in the skin, ligaments, tendons, cartilage, muscles and bones to name but a few places. The cells responsible for synthesising collagen and masterminding wound healing are the fibroblasts. Collagen has been categorised as many different types, due to its abundance in the body. When talking about skin, we are mostly focusing on collagen types I and III.

When looking at the use of oral or ingested collagen, the size of the collagen molecule is the first thing most people question. In its natural form the collagen molecule is very large and would simply not get absorbed if ingested; it would be broken down by the gut into its constituent amino acids and mostly excreted.

The key therefore is to produce a much smaller molecule, which is easily absorbed if taken orally and will quickly and easily enter the blood stream. A better bioavailability for collagen is achieved in the form of a hydrolysed collagen product which is enzymatically pre-digested, whereby the molecular bonds between the individual collagen strands are broken; these are known as collagen peptides. The amino acid content of hydrolysed collagen is the same as the collagen itself and is predominantly glycine, proline and hydroxyproline.

All of the collagen drinks or beverages on the market use a hydrolysed collagen to achieve this improved rate of bodily absorption of the collagen. However their molecular weights differ from each other with some sized at 3kDa and others at 2kDa. This is still much smaller than a regularly eaten hydrolysed collagen, gelatine, which is used in the food industry and can have molecular sizes ranging from 45kDa up towards 200kDa+.

The key concept with ingesting a hydrolysed collagen is that once it has entered the blood stream the body recognises the presence of the specific collagen peptides, (which usually become present naturally in the body when it gets hurt) and this stimulates it to produce more of its own type specific collagen as a wound healing response; be this dermal fibroblast stimulation or cartilage repair for example.

This is paramount to the reason why collagen peptides are needed, and why the specific amino acids themselves could not be used on their own with efficacy. Ingestion of the required amino acids, on their own, would not have the same stimulatory effect. High strength sources of differing amino acids are commonplace in sports nutrition and body building products which are readily and cheaply available in health food shops and high street pharmacies; these are aimed at building bulk and growing muscle tissue.

There is quite a body of data available looking at the effects of oral supplementation of collagen peptides and its effects on fibroblasts and other components of the dermis, using both human and animal (rat) models, with a variety of differently sourced hydrolysed collagens.

Nutricosmetic products of this type favour one of two types of hydrolysed collagen – marine or bovine sourced. (Porcine sources are available but are not used by any of the products discussed in this article).

Marine collagen is produced from fish scales and skin, with bovine collagen derived from cattle skin and bones. Marine collagen can of course come from sea or fresh water sources but the preference is to use fresh water as this reduces the sodium content of the collagen and also the likely concentrations of toxins, such as mercury, which are common with sea fish.

There are of course proponents for both forms.

It is documented that animal sourced collagen is more like our own in molecular structure and thus the body recognises it and can process it more efficiently. Dr. Cheryl M. Burgess wrote in her book **Cosmetic Dermatology** (on page 100); "*bovine collagen is very similar to the human molecule, with specific differences only in the end peptides (telopeptides). These regions can be removed in processing, leaving a core protein similar to that of a humans.*"

Similarly, those in favour of bovine collagen point out that fish can be an allergic component for some people, quoting the **British Allergy Foundation** who put it at 1 in 200 people, which they say is considerably less likely with bovine collagen.

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Those who advocate marine collagen of course throw in the counter arguments and note that a fish source reduces the potential risk from pathogens such as BSE. Yet with rigorous disease control and animal importation rules which prevent the use of animals from countries who have had the disease within their cattle population, alongside production processes which eliminate pathogens in the finished product, the bovine collagen camp dispute this as even likely in the production of bovine collagen products.

Whichever camp you are in it's worth noting that both are likely to be unsuitable for vegetarians, unless they have a pescatarian leaning. Similarly some people can just be adverse to the concept of animal sourced products going into their body, especially for religious reasons.

When it comes to the big debate on orally taken collagen, the critics claim a number of different issues with the principle concept.

Firstly, it is viewed by some that there is no evidence to show that the oral supplementation of collagen will actually place it exactly where you want it, in the case of anti-ageing claims, within the facial dermis; it could go anywhere in the body, with some ending up in the skin of the face. However, the counter to that is that if there is sufficient hydrolysed collagen consumed, such as with the daily dosing, then it will be distributed wherever collagen tissues reside in the body, at therapeutic levels, (including in the skin).

Secondly, collagen synthesis is based on the composition of amino acids, many of which can also be found in proteins that we eat, such as meat. Therefore there are those who argue that a protein-rich diet contains sufficient concentration of the desired amino acids for collagen synthesis, making supplementation unnecessary.

In fact, many go on to point out that any clinical trial data carried out by companies wishing to promote a nutraceutical or collagen beverage are flawed from the start, as they are unlikely to take into account the individual's diet during the trial period. This means that the impact from the amount of protein that they ingest is not taken into consideration when attributing any noticeable results and may thus be inaccurately attributing them to the supplementation. Others contradict this and note that the types of collagen building animo acids found in say a beef steak would not be the same as those needed to build type I and III collagen for skin, despite them being beneficial for the body overall.

Those with known liver or kidney problems may be contraindicated for collagen supplementation.

Hyaluronic Acid

Hyaluronic acid (HA) is a sugar polymer known as a glycosaminoglycan, and is an important component of cartilage as well as being the main molecule found in the extracellular matrix of the skin.

The main property of HA is its ability to bind to water to increase hydration of the tissues.

The downside to HA is that it is very sensitive to free radicals (e.g., UV, pollutants, chemicals such as smoking etc.) and hydrolysing enzymes or hyaluronidase which is naturally produced by the body. Therefore it is estimated that out of all the HA that we produce in our bodies daily, approximately one third of it is degraded every day. Add to this that as we age, we don't produce as much HA and soon the rate of production can't keep up with the rate of degradation, leading to painful joints and the symptoms of skin ageing.

Having learnt to manufacture HA through enzymatic and bacterial processes, there are two types available, high molecular weight, commonly used in dermal fillers and in cosmetic skin creams to produce a silky effect on the skin (this molecular weight is too large to penetrate into the skin) ad low molecular weight. The low molecular weight HA is also referred to as fragmented HA as it is simply made up of small chunks of high molecular weight HA. This is used in cosmeceuticals as it can penetrate superficially into the skin.

When it comes to orally taken hyaluronic acid, there are differing opinions on its effectiveness, much of which again hinges on the molecular size of HA. Similarly, some medics have argued that if you ingest HA, who says it will go where you want it to go, namely the skin; it could go anywhere in the body. There are studies both for and against the ingesting of hyaluronic acid for this indication.

A clinical paper by **Laznicek M et al in 2012** which looked at radiolabeled HA given to rats concluded that if it was given orally there was no significant absorption of the HA. This study used hyaluronic acid with molecular weights ranging from 100kDa to 1,000kDa.

Another clinical paper by **Balogh L et all in 2008** looked at the absorption, uptake and tissue affinity of high molecular weight HA given orally to rats and dogs. Radiolabeled HA was given and detected in blood, muscles, salivary glands and bone within 30 minutes and peaked at 4 - 6 hours. Less than 5% of the radioactivity appeared

in faeces after 72 hours thus showing absorption was substantial. The study used an HA supplement called Nutrihyl which has a molecular weight of 1,000kDa. The study concluded that its findings were the first evidence for uptake and distribution to connective tissues of orally administered, high-molecular-weight HA; albeit in non-humans.

Conversely, a study by **Sato T et al in 2002** which used a double blind feeding study to evaluate the use of a 120mg/day dietary HA supplement versus placebo on 35 individuals who frequently suffered from dry, rough skin showed that the ingestion of hyaluronic acid is effective in increasing moisture retention and smoothness in the skin, without any safety concerns. These skin benefits also continued to rise significantly 2 weeks after intake stopped, which indicates fundamental skin changes have occurred. The dietary hyaluronic acid used in this study was called Hyaluronsan HA-F which has a molecular weight of 800kDa.

Those products using hyaluronic acid in their nutricosmetic formulations reference much smaller molecular weights that this, so one could extrapolate increased efficacy perhaps.

Antioxidants & Other Ingredients

All of the collagen based beverages on the market contain a formulation which includes a number of antioxidants (vitamins), essential fatty acids and extracts from a variety of other sources. Many include a recipe of 6 or 7 co-ingredients which it is claimed all have adjunctive qualities and work synergistically in aiding the absorption and effectiveness of the ingested collagen.

The most commonly added antioxidant is one or other derivatives of vitamin c such as ascorbic acid or calcium ascorbate. This is because biologically speaking vitamin c is required in the enzymatic reaction of collagen synthesis and so is a must include ingredient.

Ascorbic acid, specifically L-ascorbic acid is noted as the most scientifically proven form of vitamin C for skin and collagen health. It can irritate the stomach but only at doses from 1000-2000mg upwards, used in doses under 500mg, as in most nutricosmetic products, it is mildly acidic so should not cause a problem in most people. Some claim that calcium ascorbate is a gentler option.

The Taste

Taste is a very personal thing. This is well known by food manufacturers and marketers, take Marmite for example, the yeast extract based spread has been happily selling to the public off the back of the strapline '*you either love it, or you hate it*' for many years and shows that the makers know that not everyone will like their product.

The challenge therefore for a nutraceutical/nutricosmetic developer is much trickier than for a cosmeceutical maker, because as well as trying to formulate a product with active ingredients, in the right concentrations and formulas, which produce scientifically credible results in the skin, it also needs to taste good to make it acceptable to the majority of people.

Let's face it; the foundation of 'selling' the product to consumers will be the taste. We might like to think that the science and desire for anti-ageing results will win them over, but at the end of the day, if it doesn't taste 'right' then compliance will go out of the window. Compliance is the art of getting people to take it and continue to do so, this falls in line with the ease of preparing and taking the product, as well as the overall taste experience. If the act of preparing it is in any way laborious or impractical, or the taste or mouth-feel is disliked, then it's very likely that commitment to the regime will be affected and there will be a sense of chore or a 'take your medicine' element, rather than an enjoyable addition to one's daily diet.

Personally I am of the opinion that not all the products on the market achieve this; but then I also don't like Marmite!

The Products

The following products are listed in alphabetical order, with no attempt to rank or promote any single one. This is not an exhaustive list; however it looks at the primary brands currently being marketed to the industry at trade shows and events. Other brands, which are available through high street chemist chains include the liquid collagen supplement Gold Collagen (5,000mg hydrolysed marine collagen).

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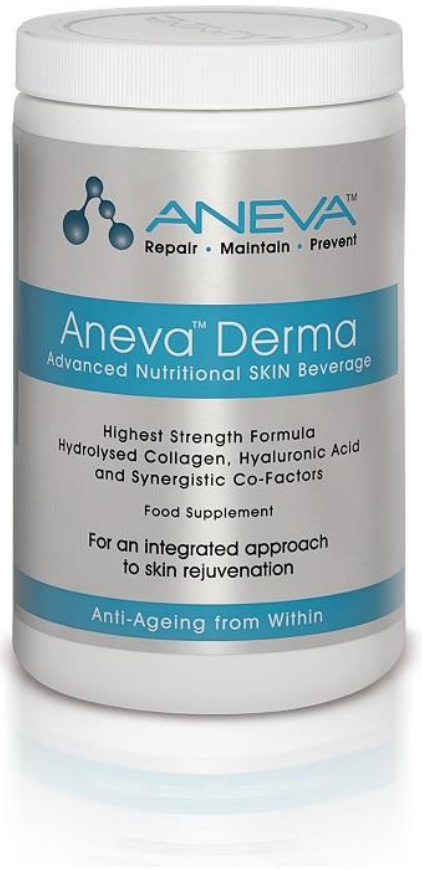
Aneva Derma



Aneva™ Derma, launched in the UK in the summer of 2014, markets itself as '*a unique, innovative skin fitness beverage specially formulated to boost collagen and skin hydration to improve overall skin health and condition resulting in smoother, more hydrated skin*'.

It has been developed by Aneva™ Nutraceuticals Ltd, a small UK based company, under a manufacturing and exclusive distribution agreement with Allergy Research Group in the USA and is distributed in the UK and Ireland by Aesthetic Source Ltd. Eva Escofet, who is behind the design and development of Aneva Derma, is an established nutritional therapist with over 10 years of clinical experience. Eva formulated Aneva Derma by combining supplements that have achieved consistent, positive results in her clinical practice over the years, for both aesthetic and physiological purposes.

The company pride themselves on the use of pharmaceutical grade ingredients and claim that Aneva Derma is in a class of its own, distinct from other collagen drinks and delivering approximately 20 times more collagen per serving than most standard collagen capsule alternatives.

Per serving, Aneva Derma contains 10,000mg (10g) of hydrolysed bovine collagen which is manufactured by Allergy Research Group under the brand name Arthred®. The molecular weight of the Arthred collagen peptide is 3kDa.

Coming from an animal source, the amino acid composition of Arthred is said to closely resemble that of the collagen found in human joint cartilage (type III collagen); it is also known to contain type I & II collagen as well. It has the highest content, measured per 100g, of the amino acids proline (15,350mg) and hydroxyproline (10,900mg), compared to marine collagen. Other prominent amino acids in Arthred are glycine (22,600mg), alanine (8,900mg), arginine (8,150mg), glutamic acid (10,450mg), lysine (3,350mg), and hydroxylysine (1,000mg).

Arthred has been used in the medical field for some time, treating patients with osteoarthritis and has been shown to be safe and effective in supporting, maintaining and promoting cartilage tissue throughout the body. Similarly, more recent research has also shown efficacy in improving skin health.

Aneva Derma also contains 210mg of low molecular weight hyaluronic acid produced by Allergy Research Group under the brand name Synovoderma®. This uses a unique, patented, enzymatic processes to reduce the molecular weight of the HA from 1,500kDa down to 50kDa derived from cocks comb.

The hydrolysed collagen and low molecular weight hyaluronic acid allows optimal absorption (95%) in the small intestine, undamaged by digestive enzymes, and distribution by the bloodstream into the deeper levels of the dermis to repair and maintain skin firmness, elasticity and hydration, according to the makers. The combined levels of collagen and HA in Aneva Derma are said to be higher than any other product currently on the market.

The makers point out that the inclusion of high quality HA is a key ingredient as HA stimulates fibroblast proliferation within the collagen matrix. Therefore HA stimulates collagen growth as well as consuming hydrolysed collagen. This gives a double barrelled, more accelerated effect on collagen synthesis rather than just consuming hydrolysed collagen alone without any HA.

Finally, Aneva Derma contains a number of other ingredients, mostly antioxidants, which are designed to address all the stages of collagen synthesis including promotion, repair and maintenance. These include 250mg vitamin C (ascorbic acid), 60mg alpha lipoic acid, 160mg each of grape seed and green tea extracts, zinc, copper and manganese.

Grape seeds contain mainly phenols such as proanthocyanidins and research suggests that it is beneficial in many areas of healthy skin because of its antioxidant effect and that it helps to protect the skin from sun damage.

Green tea polyphenols, delivered in a beverage, have been shown to protect skin against harmful UV radiation and help to improve overall skin quality. It is worth noting that the green tea extract used is 100% decaffeinated so there are no issues with extra stimulation or vitamin C absorption, as there would be if caffeine was present.

More specific data behind each ingredient included can be found **here**.

The expectation of results is very much driven by the age and skin condition of the individual, with younger people (35+) expected to see result quicker than more mature, post-menopausal women for example.

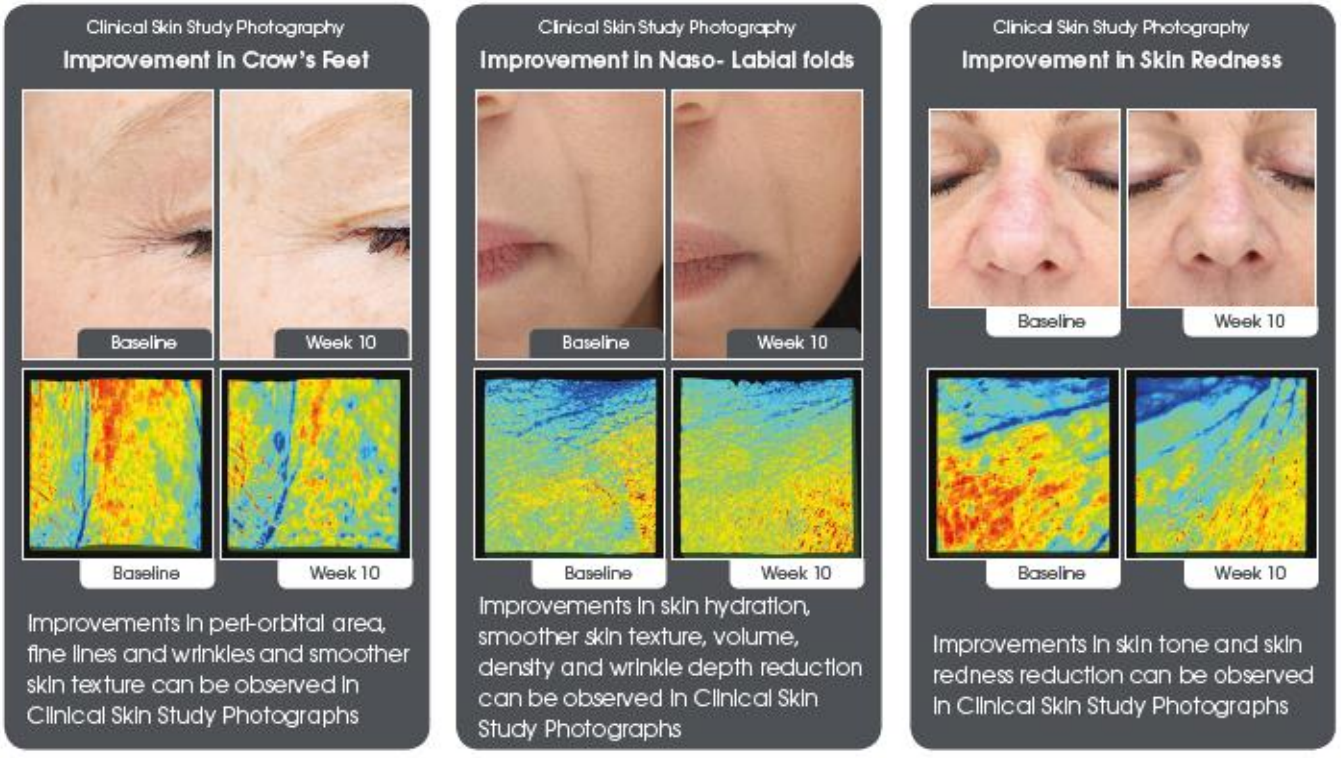
On average it is expected that after taking Aneva Derma for 7 to 10 weeks, an individual can see visible benefits in their skin quality and is also likely to notice improvements in the condition of hair and nails. According to a 10 week 'Proof of Concept' study, skin hydration improvement was found after 3 weeks in 100% of tested candidates. The product is packaged in a single tub with a scoop dispense and is recommended to be prescribed in a 3 month treatment programme.

The manufacturers also note that as well as being a stand-alone anti-ageing aid, Aneva Derma can also enhance the effects of medical aesthetic treatments, including medical skin needling, cosmetic injectables and light based energy devices, by stimulating collagen production and facilitating skin repair. It is also being marketed as an aid to healing and scar reduction, in the case of post-cosmetic surgery. Anecdotal results are also positive for general improvements to many of the symptoms associated with the menopause, particularly in relation to joint health and skin hydration.

A 10 week 'Proof of Concept' study evaluating the effectiveness of the daily use of Aneva Derma has just been completed in the UK.

The 'Proof of Concept' study which included 6 women and 1 man, aged 47 to 56 with mild to moderate facial lines and coarse wrinkles in the eye area, skin dehydration and mottled pigmentation saw participants abstain from any other anti-ageing practices including topical skincare, whilst ingesting Aneva Derma daily. The results of each individual were then evaluated using the Visia Skin Analysis device and self-assessment questionnaires.

At the end of the trial, 100% of participants agreed that their skin was more hydrated, the texture was smoother, firmer, skin had more volume and wrinkles were less noticeable. 80% reported less redness. Visia analysis highlighted improvements in skin hydration and lines such as crow's feet and naso-labial folds.



A 90-day (12 week) clinical trial with skin biopsies measuring collagen, elastin and hyaluronic acid levels and blood serum checks measuring hydroxyproline amino acids and HA levels is also currently underway under the guidance of American Dermatologist Dr. Beth Briden, with the results expected early in 2015.

Dr. Diane Keith told us; "*I have used Arthred on its' own in all my clinics for the last year with amazing results. I am extremely excited by this revolutionary new product which tackles the ageing process from A-Z. I have been approached to use other "collagen drinks" however Aneva Derma is in a league of its own.*

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This product is based on sound research. Aneva Derma differs from the others by addressing cross-linking problems with antioxidants. It also provides exceptional collagen and hydration skin support due to the high level of hyaluronic acid and Arthred hydrolysed collagen peptides. In all my years of clinical experience I have not seen a product that promises such potential. To my delight the product is at a competitive price and yet its performance is superior."

Aneva Derma is supplied in a powder formulation which should be mixed with water or juice (based on one scoop of powder) and is recommended to be taken before bedtime. The manufacturers believe this to be the optimal time for collagen production, as during sleep growth hormone production and cell renewal peaks, which in turn stimulates collagen production.

Aneva Derma has a vanilla/caramel flavour and retails at £110 per tub for a 30 day supply, a 90 day regime is recommended. A 3 month supply will soon be available with a branded cocktail shaker, for easy preparation, which can be sold to cosmetic clinic clients as their starter pack. It is only available through clinics, but may be sold online through their own ecommerce websites.

Visit **www.aneva.co.uk** for more information.

Collagen Shots

Collagen Shots is manufactured and supplied by Rejuvenated Ltd. It was formulated by beauty specialist Kathryn Danzey and her development team of nutritionists and experts in the functional drinks market. She wanted an affordable product that would make an obvious difference quickly, without compromising on potency.

The company notes that Collagen Shots has the highest levels of marine collagen, compared to similar products on the market, containing 10,000mg of hydrolysed marine collagen per serving, with a higher amount of the collagen stimulating amino acid hydroxyproline (10,125mg per 100g) over any other marine collagen. They also point out that they freeze-dry their collagen to ensure the right molecular structure is formed within the protein, as they note that protein is very sensitive to heat and exposure to high temperatures may cause degradation.

Collagen shots also contains 500mg of acai berry, 15mg of hyaluronic acid, 80mg of vitamin C in the form of ascorbic acid, as well as B vitamins including B3, B5 and B6. The product is sweetened with Stevia, a natural plant derived sweetener and flavoured with berries.

Acai berry has been included as the antioxidant of choice for its high Oxygen Radical Absorbance Capacity (ORAC) value, which enables it to neutralise many free radicals. It also has high levels of essential fatty acids, omega 3 and 6, and twenty one amino acids. It helps to boost energy levels, support the immune system, promote healthy digestion, as well as increase the antioxidant levels and neutralise damaging free radicals. Copper and zinc have been added to the formulation. Copper is said to contribute to the maintenance of normal connective tissues and the protection of cells from oxidative stress, while zinc contributes to normal DNA synthesis.

Dr. Toni Phillips, Clinical Director for Destination Skin, told us; "*The results start almost immediately. Within 2 weeks, an improvement in hydration is noticed and the skin starts to glow. After 4 weeks, the glow is sustained not just on the face but on the skin all over the body. A general feeling of increased energy and well-being is often reported, probably due to the extra nutrients that support the body. This is especially noticed by people who don't usually take daily supplements. Most of the studies support the idea that it takes about 12 weeks to see a difference on the outside: plumper, dewy, more elastic skin.*

From my own experience and that of my clients, I would say that there is definitely an improvement in the firmness, suppleness and elasticity of the skin. Again, this doesn't only apply to the face, but all over the body. A few of my

clients have also commented that their hair and nails seem stronger. That isn't really too surprising and another potentially exciting benefit of the daily use of Collagen Shots."

Collagen shots is supplied in a powder formulation which should be mixed with 200 – 250ml of water or juice (based on one scoop of powder) and whisked with a fork until thoroughly mixed. It is recommended to leave it to stand for one minute and to whisk again before drinking. For optimum results the manufacturers recommend it to be taken 30 minutes to one hour before bedtime, on an empty stomach, although it may be taken at any time before a meal.

Collagen shots retails in two packet sizes, a 14 day supply for £22.95 and a 30 day supply for £39.95, making it the most affordable of the main brands in the marketplace. The modest packaging is no doubt a reflection on the makers desire to make it affordable but without compromising the actual product itself.

H_30 Hydration & H_3O Night Repair

Rejuvenated Ltd has also brought out some adjunctive products to support and compliment their existing Collagen Shots formulation, in the form of H_30 Hydration and H_3O Night Repair.

H_3O Hydration claims to provide all the minerals and ions essential for hydration at a cellular level to allow cells to function effectively. It aims to reduce the feeling of tiredness and sluggishness often associated with modern living.

It is hypotonic and is of a lower concentration than blood so it allows for speedy transmission of electrolytes and minerals through the stomach wall and in to the blood stream.

It contains hyaluronic acid and trans-resveratrol, sourced from grapes and berries, which is a highly available form of resveratrol chosen for high absorption within the body.

The makers note that it has been shown to be more effective than Vitamin C, Vitamin E and Beta Carotene.

H_3O Hydration retails at £24.95 for 30 servings. It is supplied as a mild, fruity tasting powder that should be mixed with 300 – 400ml of water and consumed at least once or twice per day. The claim is that it is more effective than just drinking lots of water daily.

H_3O Night Repair is a capsule based supplement to be taken once a night with water or the prepared Collagen Shots drink.

Amongst other things it contains 4% astaxanthin (from marine algae), ionic electrolytes (calcium, magnesium, potassium, sodium and other trace minerals), maritime pine bark extract, grape seed extract, hyaluronic acid, vitamins A, B2, B3, C, D and E and astragalus root that all together claim to give powerful anti-oxidant and anti-inflammatory effects.

H_3O Night Repair retails at £30 for a 30 day supply.

Dr. Toni Phillips is a fan of this regime, she said; "*The use of these three products - Collagen Shots + H3O Hypotonic drink + H3O Night Repair makes so much sense when we think about what our body needs to support and restore itself.*

As well as the external aesthetic skin benefits, I have seen such wonderful results with this regime including: no or less puffiness around the eyes and jawline in the morning; diminished dark circles and overall increase in energy and the feeling of well-being."

Visit **www.rejuvenated.co.uk** for more information on Collagen Shots and the H_3O products.

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Skinade

Skinade, launched to the UK market in March 2013, is marketed with the trademarked strapline, '*better skin from within*'. The makers note you can '*drink your way to younger, healthier and better looking skin*'.

The unique, patent pending formulation has been designed to deliver essential nutrients in a liquid formulation, flavoured with peach and magosteen, promoting high absorption and bioavailability. It is being marketed as both an improvement product for those looking to counter the effects of ageing and as a maintenance product for healthy skin, which would have a preventative effect against ageing.

It has been developed and manufactured in the UK by Bottled Science Ltd, who also distribute the product to the market. The nutritionist behind the product design and development, (who cannot be named due to the patent application process), holds a BSc & MSc in Pharmaceutical Chemistry and Technology, a Diploma in Nutrition and Health from BCNH and a PhD in Clinical Nutrition (Faculty of Medicine Milan).

Per serving, Skinade contains a blend of 7,000mg (7g) of hydrolysed marine collagen from a fresh water source, which is manufactured by the Rousselot, the world's leading producer of hydrolysed collagen under the brand name Peptan®. The collagen peptides are mostly derived from fish skin giving them a high level of type I and type III collagen, which matches the human collagen types for skin production. They have a low molecular weight of 2kDa, making them the smallest on the market and have high levels of amino acids, measured per 100g, including glycine (21,200mg), proline (10,700mg), hydroxyproline (10,100mg) and alanine (9,500mg). It does not include a source of lysine so this is added separately.

The Peptan collagen peptides have been tested for efficacy in skin studies in unpublished placebo controlled clinical trials in Japan and France, both of which looked at less than 50 participants. The results of oral intake were assessed using devices to measure skin moisture levels, skin elasticity, skin imaging and self-assessment questionnaires. It was reported that Peptan increased skin hydration by 28% after 8 weeks. A later French study of 100 people has shown that Peptan decreases collagen fragmentation and increases collagen density.

Skinade also contains concentrated grape juice, calcium ascorbate (vitamin C), Methylsulfonylmethane (MSM), B vitamin complexes (B3, B5, B6, B1, B2, B7, B9 and B12), omegas 3 and 6 from organic flax seed and L-lysine. It is sweetened with sucralose.

The inclusion of vitamin C in is the form of calcium ascorbate. According to the developers, as vitamin C is needed to facilitate absorption of the collagen calcium ascorbate is included at a high dose of 450% of the Recommended Daily Allowance (180mg).

The MSM (1,000mg) is a naturally occurring form of organic sulphur found in all living organisms. The integrity and structure of collagen is maintained through sulphur bridges, which as we age, weaken and collapse, causing collagen fibre cross-linking. Skinade includes this source of sulphur to aid the body in producing elastic and it works as a detoxifying and anti-inflammatory agent.

B vitamins are very important for the maintenance of normal, healthy skin. Riboflavin (vitamin B2 also contributes to the protection of cells from oxidative stress. Niacin (vitamin B3) dilates capillaries in the skin, thus increasing blood flow to areas of poor circulation. Folic acid (vitamin B9) and Cobalamin (vitamin B12) play a role in the process of cell division.

The essential fatty acids of omega 3 and 6 are provided by the inclusion of organic flax seed oil (45mg). This typically provides 26mg of alpha linolenic acid (omega 3) and 7mg of linoleic acid (omega 6). This is an essential skin balancing agent that helps moisturise dry skin and balances oily, problem skin. It also has anti-inflammatory properties.

L-lysine (124mg) is synthesised form of an essential amino acid that is depleted as we age. It is key to rebuilding and integrating the collagen matrix in the dermis at the cellular level. It has proven use acting as an immune system boosting agent in relation to cold sore sufferers. The makers of Skinade have also received positive feedback from eczema and psoriasis suffers who are using the supplement which could be attributed to the addition of L-lysine. This is purely anecdotal at this stage.

Skinade does not contain a source of hyaluronic acid as the manufacturers note that the mechanism of action of their collagen peptides means that there is an increase in the synthesis of HA due to the stimulation of hyaluronan synthase 2, the enzyme which brings about hyaluronic acid production in the body.

Independent before and after photos, following 30 day Skinade consumption.

Independent before and after photos, acne after 60 day Skinade consumption. (Provided by Bottled Science Ltd)

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Dr. Kathryn Taylor-Barnes, owner of The Real You Clinic, told us; "*...what the company has found particularly is that it's been taken up by plastic surgeons to provide a home treatment in preparation for major facial surgery, as well as after surgery, because the formulation has a few components in which combine together in the skin and really helps to reduce swelling.*

So it has an anti-inflammatory effect without having to take traditional non-steroidal anti-inflammatories which can have a negative effect on your stomach lining and your kidneys. The particular components of Skinade which have been shown to help this, although this is anecdotal, is the flaxseed omega 3 and omega 6 and the MSM which is an organic sulphur component, so those two things are probably the things that bring down the inflammation.

In terms of patients who are coming to me for facial rejuvenation and injectables, these ladies may be physically tired, they're over worked, they've also probably got a bit of stress exhaustion, and the skin looks a bit lack lustre and dehydrated. So what I've found is that with a high dose B vitamin complex in Skinade, together with a high dose of vitamin C, it seems to help to calm the nerves, improve energy and make the skin glow and hydrate it which is being shown to help with the fine lines around the eyes, which is often a problem with older ladies."

In an independent survey of 282 respondents who were taking Skinade, of those who had been taking it for 100 days, 100% said their skin felt more hydrated and better, 97% said it felt healthier, 91% said it felt more radiant, smoother and younger and 81% reported fewer lines and wrinkles.

It is available in pre-made, ready-to-drink 150ml bottles and travel packs (which comply with airport restrictions) of liquid sachets (15ml) which are to be made up with a glass of water.

The manufacturers of Skinade noted that they have chosen to create a liquid product rather than a powder to increase absorption by the body as their formulation is 100% in solution, which they quote produces an absorption rate of 90 – 95%. They are of the opinion that if all the formula is not in solution then the body has to work harder to absorb it and may not do so to optimal levels.

It is recommended that Skinade is taken at breakfast time for two reasons. One it becomes habit forming at a time when a person is ritually repeating the breakfast process. And, two the theory is that the morning is better as the stomach is empty having fasted overnight so the absorption of Skinade should be quicker.

Although marketed for long term, daily use, some doctors note that as long as regular consumption is maintained, (perhaps taking during the week and not at weekend), the individual is still likely to see good results as the months go by and this may help to spread the cost.

Skinade retails at £90 for a 30 day supply, a 90 day regime is recommended. It can be purchased through clinics and is available to buy online by the public; however the price point is more expensive (due to postage costs) than seeking supply direct from their stockists. Clinics can however refer their patients to buy online using a special code which then returns the purchase profit direct to them.

Visit **www.skinade.com** for more information.

The Marketplace

There is no doubt that nutraceuticals or nutricosmetics in the form of collagen drinks and formulated beverages is going to be a growth market that we will all be talking about in the coming years.

According to market research firm Transparency Market Research, the global nutraceuticals product market, which includes dietary supplements, functional food and functional beverages reached $142.1 billion in 2011 and is expected to reach $204.8 billion by 2017. Just looking at functional foods and beverages they estimated this segment to be worth $93 billion in 2011.

Of course reports on nutraceuticals cover what is a very broad range of products, but I believe it still emphasises consumer demand and drive for health and anti-ageing supplementation in their daily diets.

When looking specifically at the nutricosmetics sector, market analysts note it is gaining most traction in Asia with the demand in Japan and China leading global growth with a 90% share of sales! Western Europe is said to be thriving with sales being driven through health professional and pharmacy based promotion, whilst markets in India and Brazil remain largely untapped and the USA has thus far not embraced the trend.

A report published by Global Industry Analysts in July 2013 stated that the global nutricosmetics market is forecast to reach $4.24 billion in 2017, with the anti-ageing segment of that market set to be second largest growth sector.

Hell, the market must be growing if the likes of Coca-Cola have dipped their foot in the water, with a pilot partnership with French firm Sanofi agreed in 2012 for a trial market of a beauty drink called Beautific Oenobiol.

Analysts have also noted that marketing practices will differ for nutricosmetics according to both geography and differences in skin types across the globe, thus an all-in-one-approach with these products will not work; an important note if your client base is diverse. For example, it is noted that skin health concerns in Asia focus on brightening and firming the skin (to achieve a more Caucasian skin tone), whilst in Europe consumers seek products that will prevent ageing of the skin through photo-damage.

Nutritionist, Kim Pearson commented; "*Many of the studies which evidence the efficacy of the components within the many nutricosmetic products were carried out on rat models which behave very differently to humans, although we are seeing more human and anti-ageing specific trials now in progress, which is promising and the results of which will be the key. It's important to note that a lot of the other ingredients in these formulations do have quality research behind them, such as vitamin C. It will be interesting to find out, as research evolves, what really is making the difference with each of these differing 'recipes'.*"

It's a tough choice to make; choosing a nutricosmetic range to 'invest in' for your cosmetic clients is not that simple. Once you get past the "*this product has more amino acid content than that one*", or "*this product has better or more optimised co-factor ingredients than that one*", or "*this one has smaller molecular weight components in it*"; you will probably be none the wiser and still struggling to separate the 'apples and pears' that these products represent.

Each has a market, each has their evidence, and there is the key...we need more and more of it. Larger scale clinical trials and maybe even comparative data is the only way that any of these products will ever truly claim the crown of nutricosmetic market leader. It's still early days for this sector, but certainly one to watch.

As for me, I tried them all, my experiences were all different and I learnt from them all. Perhaps this is the best thing you can do for your customers, give them a try yourselves and see what you think – science is important but you need to decide if 'you love them or hate them'!

Lorna Jackson

Lorna has been Editor of The Consulting Room™, the UK's largest aesthetic information website, for over a decade, since 2003. She has become an industry commentator on a number of different areas related to the aesthetic industry, collating and evaluating statistics, plus researching, investigating and writing feature articles, blogs, newsletters and reports for The Consulting Room™ and various consumer and trade publications, including *Cosmetic News, Journal of Aesthetic Nursing, Body Language*, *PMFA News*, *Aesthetic Medicine* and *Aesthetic Dentistry Today.* Lorna has also been asked to present at various industry events, including Smart Ideas, BACN and Merz Aesthetics Business Workshops, the FACE Conference and the Clinical, Cosmetic & Reconstructive Expo.

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