6

FORMULATING BI-PHASE SERUMS

ADVANCED CERTIFICATE IN
HIGH-PERFORMANCE SERUM FORMULATION

- THIRD EDITION -

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LEARNING OUTCOMES OF MODULE 6: FORMULATING BI-PHASE SERUMS

By the end of Module 6 you will be able to discuss the functions/benefits and properties/qualities of bi-phase serums; identify appropriate ingredients to include in bi-phase serums; use a formulation template to formulate bi-phase serums; and make a range of bi-phase serums.

LEARNING OUTCOMES BY LESSON:

6.1 FORMULATING BI-PHASE SERUMS

You will be able to:

- Define a bi-phase serum and describe how it is different to an emulsion.
- Discuss the functions/benefits and properties/qualities of bi-phase serums.
- Describe the typical ingredients bi-phase serums contain and name examples of each type of ingredient.
- Select appropriate packaging for bi-phase serums.
- Put in place strategies to extend the shelf-life of bi-phase serums.
- Analyze examples of bi-phase serums on the market.
- List the percentage ranges within which different ingredients are included in bi-phase serums.
- Discuss factors to consider when creating your formula.
- Use a formulation template to formulate bi-phase serums.

6.2 FORMULATION EXAMPLE: ANTI-REDNESS BI-PHASE SERUM WITH GOTU KOLA

You will be able to:

- Explain why we used the ingredients included in our example formulation.
- Make an anti-redness bi-phase serum.

6.3 FORMULATION EXAMPLE: ANTI-POLLUTION BI-PHASE SERUM

You will be able to:

- Explain why we used the ingredients included in our example formulation.
- Make an anti-pollution bi-phase serum.

6.4 FORMULATION EXAMPLE: EXFOLIATING AHA BI-PHASE SERUM

You will be able to:

- Explain why we used the ingredients included in our example formulation.
- Make an exfoliating bi-phase serum.

6.5 TROUBLESHOOTING BI-PHASE SERUMS

You will be able to:

- Solve common problems you may encounter when making bi-phase serums.

6.6 LABORATORY TEST REPORTS: BI-PHASE SERUMS

You will be able to:

- Interpret the results of preservative efficacy testing.

6.1 FORMULATING BI-PHASE SERUMS

6.1 FORMULATING BI-PHASE SERUMS

In this lesson, we will cover:

1. What is a bi-phase serum?
2. Different types of bi-phase serum.
3. Functions/benefits and properties/qualities of bi-phase serums.
4. Ingredients used in bi-phase serums.
5. Packaging.
6. Shelf-life.
7. Examples on the market.
8. Formulation template.
9. Factors to consider when creating your formula.

Bi-phase serums are suitable for all skin types.

WHAT IS A BI-PHASE SERUM?

Bi-phase serums are made of two separate layers – a water phase and an oil phase. Unlike in an emulsion, the two phases are not blended together to form a white homogenous emulsion. They stay separate in a bottle, with the oil phase usually on the top of the water phase.

DIFFERENT TYPES OF BI-PHASE SERUM

The main way to vary bi-phase serums is by adjusting the ratio between the water phase and the oil phase. Serums with a larger water phase will result in a lighter and quicker to absorb product. Serums with a larger oil phase will be richer and more nourishing, emollient and softening.

FUNCTIONS/BENEFITS AND PROPERTIES/ QUALITIES OF BI-PHASE SERUMS

Bi-phase serums are suitable for all skin types. They are usually not very occlusive, but they can be emollient and nourishing, along with providing the benefits offered by high-performance ingredients.

They contain both an oil and water phase, which also means they can contain water and oil soluble active ingredients without risking any kind of instability (as in emulsion-based serums, for example). Due to the fact that they contain a water phase and an oil phase, depending on the phase ratio they can be formulated to have different levels of moisturizing and/or nourishing properties. They can also offer additional benefits, such as:

- skin brightening
- soothing
- plumping
- moisture boost
- antioxidant
- anti-aging
- toning

Ingredient-wise, bi-phase serums are similar to emulsion-based serums. Since the oil and water phases are not combined in a stable emulsion, there is no need to add an emulsifier. For some people, emulsifiers can be a source of clogged pores, so formulating an emulsifier-free product is a nice solution. Also, there is no need to worry about emulsion stability; bi-phase serums can easily include many active ingredients that would negatively affect a typical emulsion.

A special feature of bi-phase serums is also the visual appeal – two separate layers in a transparent bottle can be very intriguing for a consumer. If they are formulated to have two different colors, the visual effect is even stronger.

The typical properties and qualities of bi-phase serums are:

- Two separate layers.
- Liquid consistency.
- Hydrating and nourishing.

INGREDIENTS USED IN BI-PHASE SERUMS

Water soluble ingredients include:

- Water/hydrosols (solvent).
- Thickeners.
- Humectants.
- Water soluble actives, vitamins and extracts.
- Salt.
- Natural colorants, eg extracts.

Oil soluble ingredients include:

- Carrier oils.
- Esters.
- Oil soluble vitamins.
- CO_2 extracts.
- Natural colorants, eg carrier oils, extracts.

WATER/HYDROSOLS/ALCOHOL (SOLVENTS)

Bi-phase serums contain water (or other aqueous ingredients such as hydrosols) as one of the main ingredients. Water is the solvent because other ingredients are dissolved in it. Purified water should be used in cosmetics (usually distilled or deionized). Hydrosols (flower waters) can also be used. They are a natural by-product of the production of essential oils; a distilled product that contains the water soluble and volatile part of the plant. They are mild and non-irritating.

Sometimes, alcohol (ethanol) is used as a solvent. This is usually the case when the formulation contains ingredients that are not soluble in water, but are soluble in alcohol. Alcohol evaporates quickly, which will cause the serum to dry and sink into the skin faster, creating a light and quick-to-dry skin feel. A high percentage of alcohol (over 50% of the formula) can cause dryness, but when used at lower percentages (eg 15% and below), the product will not have a drying effect. When the formulation includes alcohol, it normally means 96% (also referred to as pure) ethanol.

Alcoholic beverages (eg vodka), are not the best option, as they are not pure alcohol. If you cannot buy pure ethanol and vodka is the only option available, you will need to take into account that it contains a lower percentage of alcohol, usually around 40%. So if a formula calls for 10% ethanol (96% version), you will need to use 24% of vodka (40% alcohol) and reduce the amount of water by 16%.

Above: Xantham gum

Above: Konjac gum

THICKENERS

Bi-phase serums generally do not include high amounts of thickener, as the consistency of both phases needs to remain liquid. However, very small amounts of thickener are sometimes added for the purpose of just slightly thickening the water phase, so it has a similar viscosity to the oil phase.

There are several types of natural thickener available. Some of the most useful options are:

Xanthan gum (INCI: Xanthan Gum)
A polysaccharide made by the microbial fermentation of glucose. Very easy to find, suitable as a thickener for bi-phase products and as a stabilizer for emulsions. It can feel slimy and sticky at higher percentages.

Konjac gum (INCI: Amorphophallus Konjac Root Powder)
A polysaccharide of the konjac plant, which grows in south-east Africa and Asia. It creates homogeneous and transparent gels with a pleasant skin feel.

High molecular weight hyaluronic acid (INCI: Hyaluronic Acid)
Though not a gum, high molecular weight hyaluronic acid can be used to create a gel. At concentrations around 0.5% it creates a soft, fluid gel; when used at 1% it creates a thick, firm gel. Using high molecular weight hyaluronic acid has a double purpose – it functions as a thickener and as a humectant.

HUMECTANTS

Humectants attract water to the skin and bind it there. Examples are glycerin, sodium lactate and hyaluronic acid. Alternatives to glycerin are glycerites/botanical glycerol extracts which are botanical extracts in glycerin. Plant material is extracted into a glycerin base, which is a great way of getting the beneficial properties of the plants into your products. Examples are licorice root and horse chestnut extract.

WATER SOLUBLE EXTRACTS AND VITAMINS

Many different water soluble active ingredients can be used in bi-phase serums and they offer a variety of different properties. Examples are AHA complex for exfoliating and moisturizing benefits, Vitamin B3 for brightening benefits, and aloe vera for soothing properties.

SALT

Even though water and oil do not mix, phases in a bi-phase serum can take a long time to separate after they have been shaken/mixed. Even after settling down, tiny droplets of oil can still be present in the water phase and vice-versa. To prevent this from happening, salt (regular table salt – sodium chloride), can be added to the water phase. Up to 1% salt in the formulation will ensure better separation of the phases.

CARRIER OILS

Carrier oils (also known as vegetable oils, plant oils or fixed oils) are made of fatty acids and other beneficial ingredients such as phytosterols, vitamins, carotenoids and squalane. Fatty acids in the oils are in the form of triglycerides.
They penetrate the upper layers of the epidermis and help the skin to function properly, plus they improve its condition and appearance.

Other components, often referred to as ‘unsaponifiables’ can have different beneficial effects on the skin – they can protect from moisture loss, they can soften the skin or even have a rejuvenating effect on it. When oils are applied to the skin they fill up the small spaces between epidermal cells, which is seen and felt as smoother, healthier and softer skin. This is a property of emollients.

NOTE

Oils that are rich in lecithin (an unsaponifiable component), for example soybean oil or unrefined sunflower oil, are not the best choice for bi-phase serums. Lecithin acts as an emulsifier, which means it will bind some of the oil with the water and thus prevent two completely separate phases from forming in the bottle. While this effect does not make the product unsafe to use, it is visually unappealing.

Lesson 2.5 Lipid ingredients: carrier oils, waxes and esters, includes details of different fatty acids present in carrier oils and how this affects the properties of the carrier oil. Lesson 2.5 also describes 20 specialist carrier oils in detail.

Esters can be very valuable in bi-phase serums.

ESTERS (ALTERNATIVES TO SILICONE)

Esters can be used as silicone alternatives to give the products a silky slip and a very light skin feel, commonly referred to as a 'dry oil' feeling.

Esters can be very valuable in bi-phase serums. They are normally more polar than carrier oils so can be more difficult to separate from the water phase. However, when adding salt to the water phase this is not usually an issue.

Naturally derived esters, for example Ecosilk (INCI: Isoamyl Laurate, Isoamyl Cocoates), are great for combining with heavier oils to make the overall formulation less greasy. They are also very good solvents for lipophilic active ingredients; they improve the spreadability of the formula and create a very light, elegant feel.

LIPOPHILIC ACTIVE INGREDIENTS

To make bi-phase serums even more potent, we can also include lipophilic active ingredients in the formulation. High-performance ingredients like lipophilic vitamins (E and A) alpha lipoic acid, coenzyme Q10 or carotenoids will add even more benefits to your serum formulations.

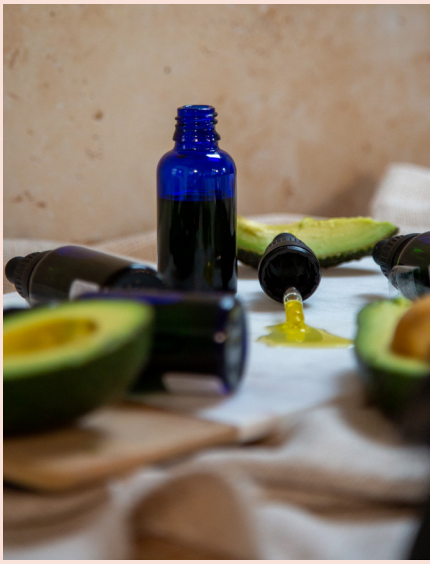
OIL SOLUBLE BOTANICAL EXTRACTS

Botanical extracts that are soluble in oil can also be used in bi-phase serums. CO_2 extracts can be used for fragrancing the products or for their active components to bring certain benefits to the skin (eg the soothing effects of calendula CO_2 extract). Essential oils will add fragrance to the product along with other components beneficial to the skin.

COLORANTS

Since a bi-phase serum that is made of two different colored layers is even more appealing, using ingredients that add a tint to each layer can be a nice touch. Some ingredients will naturally add a color to your product – unrefined carrier oils for example: avocado for dark green, wheatgerm oil for brownish tones, rosehip oil for red-orange tones. Essential oils that contain chamazulene (blue chamomile, blue tansy, yarrow) will add a blue color to the oil phase. Many botanical extracts also add a tint, but most of the water soluble ones (eg beetroot for red color, different berry extracts for pink to purple colors) are very unstable and usually degrade over time, due to exposure to light and heat. Liquid chlorophyll can be used as an active ingredient and will add an intense green color to the water phase. Some active ingredients will also dye your product – coenzyme Q10 creates an intense yellow-orange color; carotenoids (either pure β-carotene, lycopene, etc or as macerated oils) create a yellow-orange to red color.

Using ingredients that add a tint to each layer can be a nice touch.

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It is worth noting that mineral colorants (oxides, micas) are not the best option for liquid serums. While they do provide a very strong and stable color, they are not soluble in oil or in water so they will settle down to the bottom of the bottle. If you are fine with using synthetic ingredients, there are many colorants (water or oil soluble) that will provide a stable color, available from cosmetic supply shops.

PACKAGING

The packaging of bi-phase serum is not as variable as with other serum types. Bi-phase serums are liquid and need to be shaken before use. This means they will need to be packaged in a bottle with a good closure that prevents any leaks. For dosing the product, closures with a lotion pump, atomizer spray or pipette are typically used.

SHELF-LIFE

The shelf-life of bi-phase serum depends on the overall formulation and manufacturing process.

The water phase of the serum requires a broad-spectrum preservative to prevent microbial spoilage. Which preservative and how much of it will be needed depends on the formulation: the ingredients it contains, the pH, etc. Generally speaking, most of the preservatives we cover in this course can provide a shelf-life of six-12 months. The only way of knowing how well your product is preserved is by getting it challenge tested. This is a lab-performed test that checks how well the preservatives protect your formula. When sending a bi-phasic product for challenging testing you only need to include the water phase.

Antioxidants (0.1% Vitamin E or 0.2-0.4% rosemary extract) can be added to the oil phase of a bi-phase serum to extend the shelf-life of the oils.

Challenge and stability tests will give you reliable information on the shelf-life of your product.

If the serums contain very sensitive ingredients, eg ascorbic acid (Vitamin C), they may become ineffective sooner, even if they are still microbiologically safe. Ascorbic acid, for example, oxidizes quickly and even if the serum is not yet spoiled, the Vitamin C will lose most of its properties.

Challenge and stability tests will give you reliable information on the shelf-life of your product.

EXAMPLES ON THE MARKET

Most of the bi-phase serums on the market are not 100% natural. Typically, they will contain synthetic colorants, UV filters or active ingredients. We tried to find examples that are based on natural and naturally derived ingredients, with minimal synthetic ingredients present. Of course, when you formulate your own it is possible to make yours 100% natural by selecting appropriate ingredients.

BABOR SKINOVAGE CALMING BI-PHASE SERUM

£56.90 per 30ml

https://uk.babor.com

Product highlights/description:

"Calming Bi-Phase Serum helps to soothe the skin while providing intensive moisture. This serum helps to strengthen the natural protective barrier of the skin and lets the skin react less sensitively. Contains a special Power Peptide that mimics the action of Royalactin – the peptide found in Royal Jelly produced by honeybees for the Queen Bee. Based on scientific research, the Power Peptide helps make the skin more resistant against all external influences and factors. Skin appears healthier looking and feels smoother with a youthful glow."

INCI: Aqua, Simmondsia Chinensis Seed Oil, Squalane, Pentylene Glycol, Glycerin, Tocopheryl Acetate, Panthenol, Hippophae Rhamnoides Fruit Extract, Benzophenone-3, Sodium Chloride, Butylene Glycol, Cucumis Sativus Fruit Extract, Allantoin, Ascorbic Acid, Camellia Sinensis Leaf Extract, Linalool, Citrus Aurantium Dulcis Flower Oil, Limonene, Pantolactone, Citrus Paradisi Seed Extract, Sodium Hydroxide, Farnesol, Geraniol, Coumarin, Citric Acid, Rosmarinus Officinalis Leaf Extract.

Our analysis:

The serum contains water as the solvent in the water phase and glycerin, pentylene glycol and butylene glycol as the humectants. It also contains skin softening allantoin and many botanical extracts (cucumber, green tea, grapefruit seed). The oil phase consists of jojoba oil, Vitamin E acetate and rosemary extract as antioxidants, sea buckthorn extract and sweet orange essential oil. The serum contains salt to prevent the phases from mixing together.

KORRES APOTHECARY WILD ROSE 15% VITAMIN C SPOTLESS SERUM

£55 per 30ml

https://uk.korres.com

Product highlights/description:

"A powerful face serum that reduces the appearance of dark spots, dullness, and skin discolorations for even, luminous skin. Formulated in two phases to maximize the results, the top oil phase is comprised of 10% wild rose oil and 15% Vitamin super C to brighten and even skin tone, while the bottom hydrogenous phase contains 5% Dark Spot Correction complex to target discolorations and dark spots."

INCI: Aqua/Water/Eau, Caprylic/Capric Triglyceride, Ascorbyl Tetraisopalmitate, Rosa Canina Fruit Oil, Glycerin, Squalane, Ethylhexyl Methoxycinnamate, Tocopheryl Acetate, Bisabolol, Butyl Methoxydibenzoylmethane, Citronellol, Ethylhexyl Salicylate, Ethylhexylglycerin, Geraniol, Helianthus Annuus (Sunflower) Seed Oil, Hydrolyzed Algae Extract, Lactic Acid, Lonicera Caprifolium (Honeysuckle) Flower Extract, Lonicera Japonica (Honeysuckle) Flower Extract, Melia Azadirachta Extract, Moringa Pterygosperma Seed Oil, Pancratium Maritimum Extract, Panthenol, Potassium Sorbate, Rosa Damascena Flower Oil, Rosmarinus Officinalis (Rosemary) Extract, Sodium Benzoate, Sodium Chloride, Tocopherol, Zingiber Officinale (Ginger) Root Extract.

Our analysis:

The serum contains water as the solvent in the water phase. The oil phase of the serum contains fractionated coconut oil and 15% lipophilic Vitamin C derivative (Tetra C), along with rosehip oil, squalane, sunflower oil, moringa seed oil and soothing bisabolol. Active ingredients and extracts in this serum are algae extract, honeysuckle extract, chinaberry extract, sea daffodil extract, ginger root extract and panthenol. The serum is preserved with potassium sorbate and sodium benzoate, it contains rosemary extract as an antioxidant and salt to prevent the phases from mixing together. This serum also contains chemical UV filters.

AVEENO POSITIVELY RADIANT MAXGLOW SERUM + FACE PRIMER

$17.97 per 45ml

www.aveeno.com

Product highlights/description:

"Create a glowing, smooth canvas for makeup and brighten your skin with this multi-tasking face primer and serum. Designed to illuminate and prime skin in one simple step, this fast-absorbing formula goes on light and locks in moisture for brighter, more radiant skin – with or without makeup."

INCI: Water, Coco-Caprylate/Caprate, Macadamia Integrifolia Seed Oil, Helianthus Annuus (Sunflower) Seed Oil, Panthenol, Simmondsia Chinensis (Jojoba) Seed Oil, 1,2-Hexanediol, Pentylene Glycol, Sodium Chloride, Phenoxyethanol, Yeast Extract, Butylene Glycol, Fragrance, Actinidia Chinensis (Kiwi) Fruit Water, Benzophenone-4, Xanthan Gum, Tromethamine, Glycine Soja (Soybean) Protein, Yellow 5, Yellow 6, Blue 1.

Our analysis:

This serum contains water as the main solvent, panthenol as a regenerative ingredient, and pentylene glycol and butylene glycol as moisturizing ingredients. The oil phase is made from an ester (coco-caprylate/caprate), macadamia nut oil, sunflower oil and jojoba oil. The water phase also contains xanthan gum as a thickener and synthetic colorants to make the water green. The extracts in this serum are yeast extract and kiwi fruit extract. Like many bi-phase serums, it contains salt to prevent the mixing of the layers. The serum is preserved with phenoxyethanol.

NACIFIC FRESH HERB ORIGIN SERUM

$26 per 50ml

https://en.nacific.com

Product highlights/description:

"An antioxidant-enriched bi-phase serum that enhances skin elasticity. Famously known as actress Jun Ji-Hyun's go-to product; boosts skin firmness and radiance; prevents the formation of premature wrinkles as it smoothens the look of fine lines and pores; helps balances skin's moisture levels; tones, hydrates, refreshes with aloe and vegetable components; leaves a tingling sensation when applied onto damaged, oxidized skin, which diminishes as it heals. Perfect for strengthening and improving overall skin health."

INCI: Aloe Barbadensis Leaf Water, Aspalathus Linearis Extract, Glycerin, Helianthus Annuus Seed Oil, Hydrogenated Palm Oil, Simmondsia Chinensis Seed Oil, Punica Granatum Fruit Extract, Ficus Carica Fruit Extract, Morus Alba Fruit Extract, Ginkgo Biloba Nut Extract, Hippophae Rhamnoides Oil, Argania Spinosa Kernel Oil, Camellia Sinensis Leaf Extract, Vitis Vinifera Fruit Extract, Citrus Aurantium Dulcis Fruit Extract, Pyrus Malus Fruit Extract, Lemon Fruit Extract, Citrus Aurantifolia Fruit Extract, Citric Acid, Aminobutyric Acid, Zanthoxylum Piperitum Fruit Extract, Pulsatilla Koreana Extract, Usnea Barbata Extract, Sodium Chloride, Tocopheryl Acetate, Adenosine.

Our analysis:

Instead of purified water, this serum uses aloe vera juice in the water phase. It also contains glycerin as a humectant. The oil phase is made of sunflower oil, palm oil, jojoba oil, sea buckthorn oil and argan oil. The serum is very rich in botanical extracts, it contains 14 extracts: rooibos, pomegranate, fig tree, white mulberry, gingko, green tea, grapevine, sweet orange, apple, lemon, lime, Japanese pepper, Korean pasque flower and usnea. The serum contains aminobutyric acid as an anti-aging ingredient, Vitamin E acetate as an antioxidant and salt to prevent the layers from mixing together.

FORMULATION TEMPLATE

Below we have provided a formulation template for bi-phase serum.

The template provided here shows the different ingredients that can be included in a bi-phase serum and the typical percentages at which they are used. You can use it as a guideline to create your own formulations. You can see examples of these templates put into action in the lessons that follow, where we share some formulation examples created by our tutors.

Different active ingredients and essential oils have different recommended usage rates which you should check before using them. You can refer to the information in **Module 2 Serum Ingredients**, your supplier, the IFRA and any relevant regulations.

Formulation template for bi-phase serum

Ingredient type	Function	w/w%
Water	Solvent	Up to 90%
Hydrosol	Solvent, active, fragrance	Up to 50%
Water-phase thickeners (optional)	Thickener, stabilizer	Up to 0.5%
Humectants	Moisturizing	Up to 5%
Salt	Separating layers/phases	Up to 1%
Active ingredients, botanical extracts	Specific skin benefit	Up to 10%
Lipid ingredients (carrier oil, esters)	Emollient, nourishing	Up to 50%
Essential oils	Active ingredient, fragrance	Up to 2%*
Preservative	Preventing microbial spoilage	q.s.**
pH adjusters	Bring pH to optimal levels	q.s.**

*The amount of essential oil you include is dependent on the oils chosen and IFRA guidelines.

**The abbreviation q.s. stands for “quantum satis” or “quantum sufficit”, meaning an amount which is enough, or an amount which suffices. This is a term used in template formulas because the amount of preservative/pH adjuster depends on the ingredient itself and the formula.

FACTORS TO CONSIDER WHEN CREATING YOUR FORMULA

We have provided you with a **product development brief** for bi-phase serums that will help you develop your serum formula based on who the product is for and the main benefits you want it to offer.

A product development brief is essentially a series of questions that help you become clear about what you are creating, for whom and why. This means you have a clearly defined outcome before you start formulating. You are more likely to create a wonderful product that customers love if you design it with them in mind. Equally, if you are creating a product for yourself, you are also much more likely to create a successful product if you consider the product development questions first.

You are more likely to create a wonderful product that customers love if you design it with them in mind.

These are the main areas to consider:

- Target audience.
- Product positioning and target cost.
- Skin type.
- Purpose or function of product.
- Desired properties and qualities of product.
- Packaging.

Getting clear on these factors will help you choose the ingredients to use. The second part of the product development brief is a **formulation worksheet** where you can start to create your formula on paper.

OUR EXAMPLE FORMULAS

The lessons that follow contain a variety of example formulations created by our tutors. They take you through the product development process by answering product development questions and then creating a product formula. You could make these formulations exactly as we have presented them to practice the techniques required and use ingredients you might not be familiar with. You could then make adjustments to them or move on to creating your own formulations from scratch.

CHOOSING YOUR INGREDIENTS

In addition to the lessons in this module you can also refer to the information provided in previous modules to help you choose the best ingredients for your formula. Helpful sections include:

- Lesson 1.1 Introduction to formulating serums.
- Lesson 1.4.1-1.4.5 Formulating for different skin types.
- Module 2 Serum Ingredients.

USING A 'HERO' OR STAR INGREDIENT

Before you create your formula or are in the process of developing it you may have one ingredient in mind that will be the 'star' ingredient in your formula (sometimes also known as the 'hero' ingredient).

It may be one that offers certain benefits you are looking for or it may form part of your brand or product story. For example, you might feature the same ingredient in every product in your brand or range. Or it might be an ingredient with a certain story that you can tell about it and this becomes part of your marketing and the story of your product. You might choose a hero ingredient based on current market trends.

An example of a hero ingredient could be Vitamin C. Look at serums on the market and the names and descriptions of the serum to see if you can identify hero ingredients chosen by other brands. When reading through **Module 2 Serum Ingredients**, or **Lesson 1.4.1-1.4.5 Formulating for different skin types**, you might identify an ingredient that you want to use as your 'hero' ingredient.

PERFECTING YOUR FORMULA

Once you have created a formula on paper, it is time to create a small batch to test it out. You can evaluate factors such as how the product feels, how the product smells, and how easily the product spreads. Based on your observations you may wish to make adjustments to the formula until you are satisfied. Professional efficacy testing and user trial reports can be arranged through cosmetic labs if you want data on the effectiveness of your product.

SUMMARY

In this lesson we learned what bi-phase serums are. We looked at the functions, benefits, properties and qualities of bi-phase serums, the typical ingredients they contain and suitable packaging. We analyzed four serums currently on the market to see what ingredients they contain and the benefits they offer. We provided a formulation template and suggested factors to consider when creating your own formulations.