

# A new, natural oil thickener investigated

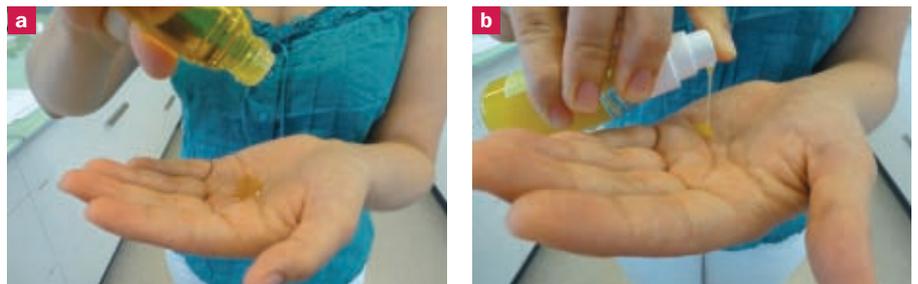
Creating highly viscous or soft-solid oil phases without losing the sensorial profile is a task not easy to accomplish for cosmetic formulators. There are few possibilities and only a few ingredients that will have a viscosity-increasing effect on liquid oils without altering the sensorial profile. There are some mineral, wax or emulsifier based thickening systems that are actually able to increase the viscosity, but usually dramatically change the sensorial profile of the oil, often turning it sticky on the skin. However, there is a demand of many formulators to turn liquid oils into a soft, easily spreadable paste. The target is not to alter the skin feel of the oil or oil mixture, to have a soft paste presented as a jar product or with pump dispensers and finally a compatibility with a large range of different oils. The typical product concepts for these formulations are massage oils, body oils, water-free sun care products, lubricants, surfactant-free make-up removers and others.

Many oils deliver a pleasant sensorial sensation to the skin. They feel soft, caring, they are easily spreadable and film-forming. However, everybody has also noticed the unpleasant side effects of this application. When liquid oils drip on clothes or run down the skin and stain materials that were not supposed to be in contact with the oil. In a nutshell, this means that the positive physical properties of the oil make it difficult to have a clean and precise application on the skin.

## Thickening made easy

dermofeel viscolid (INCI Name: Hydrogenated Vegetable Oil) is a new, 100% natural ingredient that makes the thickening of oils very easy. It is composed of a mixture of hydrogenated plant oils, among which some cultivars produce long chain fatty acids that are perfect for creating the thickening-network within the oil. Being of the same chemical nature like the oils it is perfectly miscible with these and forms a homogenous creamy and soft-solid product.

Depending on the dosage of dermofeel



**Figure 1:** The application of the **a)** gellified oil, is precise and clean compared to the **b)** liquid oil (See Formulation 1).



**Figure 2:** The pure oil (left) starts running and spreading on the skin. The same combination of natural oils, when gellified with 5% dermofeel viscolid (right), stays in its place.

viscolid it is possible to increase the viscosity to more solid textures, this depends on the formulator's needs. The typical concentration range is between 3%-10% and depending on the dosage an increasing viscosity is reached as can be seen in the example with sunflower oil (Figs. 3 and 4).

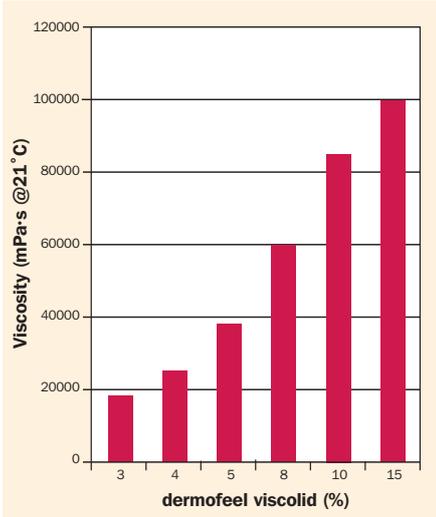
The new hydrogenated vegetable oil can be used with various oils. The dose-dependent effect is very similar to virgin plant oils, natural or semi-synthetic ester oils, mineral oils or silicon oils. Therefore the spectrum of use is very broad and it

can be used in traditional silicon based concepts or 100% certified natural products, too. Various examples for the thickening effect with different oils at concentrations of 5%, 10% and 15% of the new hydrogenated vegetable oil can be seen in Figure 5.

And finally the thickening of mixed oil phases is no problem either. Figure 6 shows various compositions of mixed oil phases that, with increasing dosage of the new hydrogenated vegetable oil, show the same viscosity increasing effect as single oils.



**Figure 3:** Pure Sunflower oil and after thickening with dermofeel viscolid.



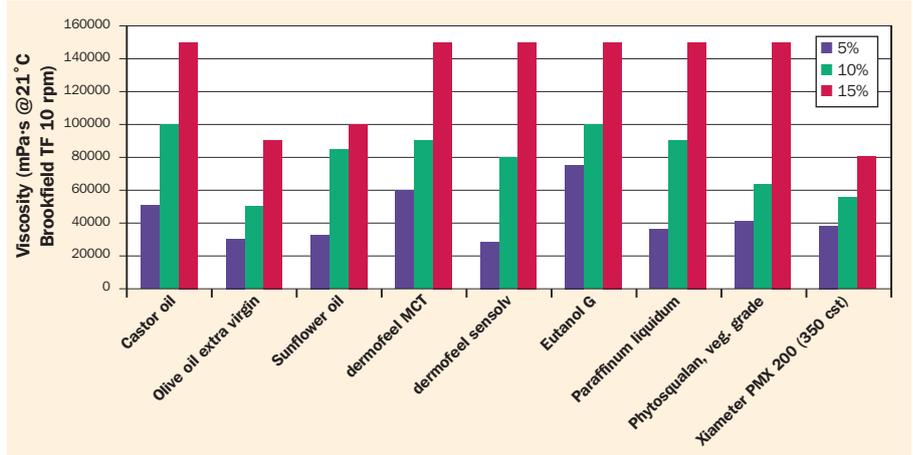
**Figure 4:** Liquid oils show a gradually increasing viscosity with growing amounts of dermofeel viscolid – as shown here with sunflower oil.

### Viscosity increase in W/O and film-forming properties

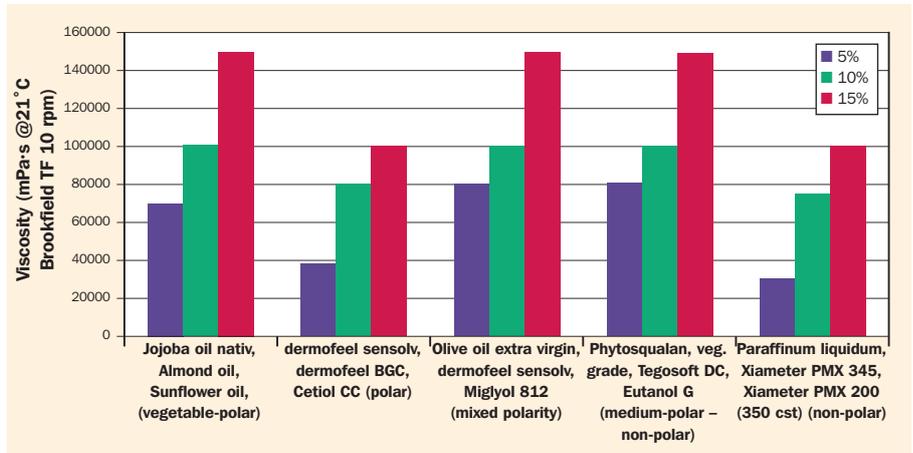
Further to the use in pure oil compositions the new hydrogenated vegetable oil shows an excellent viscosity increase and stabilisation of water in oil emulsions. Again, unlike other stabilisers (e.g. waxes) it shows these effects without altering the sensorial profile of the cream. With other thickeners the side effect of viscosity increase in W/O-products is that these become even heavier or stickier than they already are. This can be avoided with the new hydrogenated vegetable oil.

Another interesting effect is in oil in water formulations. In such products it does not show any thickening effect at all. However, it increases the richness of the formulation and adds film forming and water resistance to the product. Thus, it can help to improve the quality of more protective lotions and creams.

The new hydrogenated vegetable oil is a powder with a melting point of ~60 °C. The thickening effect is based on a delicate



**Figure 5:** Viscosity increase for vegetable oils, ester oils, mineral oil and silicone oil at different use concentration of dermofeel viscolid.



**Figure 6:** Mixed oil phase shows the same viscosity increase with dermofeel viscolid.

network of fine lipid crystals that upon contact with the skin melt and forms a liquid phase displaying the sensorial profile of the oil mixture used.

Formulating with the new oil thickener is very easy. It is melted into the oil phase at temperatures above 60 °C under medium stirring until the solution is transparent. Due to its structure it is not oxidisable. In pure oils the mixture is cooled down under stirring until the solution becomes turbid. At

35 °C it is homogenised for approximately 1 minute and the mixture untouched until a homogeneous gel is obtained.

For stabilisation and viscosity increase in W/O-emulsions the recommended concentration of the new hydrogenated vegetable oil is added into the oil phase, melted and further processed as usual.

### Conclusion

To conclude, dermofeel viscolid is an excellent natural thickener for oils and can convert every liquid oil into a solid product. dermofeel viscolid works with mineral oils, silicons, ester oils and vegetable oils that can be mixed with essential oils too. The solidifying properties of this 100% natural raw material make it possible to increase the viscosity of W/O emulsions without increasing the body or sensorial profile of the formulation.

However, the main application may be the production of spa products. The viscosity of massage products can easily be increased with the help of dermofeel viscolid but on the skin the jellified oil melts and recovers its original liquid and oily skin feel. Thus upon melting on the skin it does not change the skin feel of the massage oil.



Formulation 1: Natural massage oil gel formulation.			
Phase	Ingredient	INCI	%
A	Sunflower oil <sup>1</sup>	Helianthus Annuus (Sunflower) Seed Oil	88.0
	Buriti oil refined organic <sup>2</sup>	Mauritia Flexuosa Fruit Oil, Tocopherol	0.5
	Copaiba distilled organic <sup>2</sup>	Copaifera Officinalis (Balsam Copaiba) Resin	0.5
	Andiroba oil refined organic <sup>2</sup>	Carapa Guaianensis Seed Oil, Tocopherol	3.0
	Dermofeel toco 70 non-GMO <sup>3</sup>	Tocopherol, Helianthus Annuus (Sunflower) Seed Oil	0.5
	Dermofeel viscolid <sup>3</sup>	Hydrogenated Vegetable Oil	7.0
B	Perf. Rosemary oil (moroc/tunis Type) P01224476 <sup>4</sup>	Parfum	0.5

**Procedure:** Mix ingredients of phase A, one after the other, and heat up to 80 °C under medium stirring until a clear solution is obtained. Start to cool down under medium stirring and stir until a turbid oil solution is obtained. Add phase B below 35 °C. Homogenise for 1 minute using an Ultra Turrax. Leave untouched until a homogeneous gel is obtained then fill containers.

**Suppliers:** 1 Gustav Heess 2 Beraca 3 Dr Straetmans 4 Frey & Lau