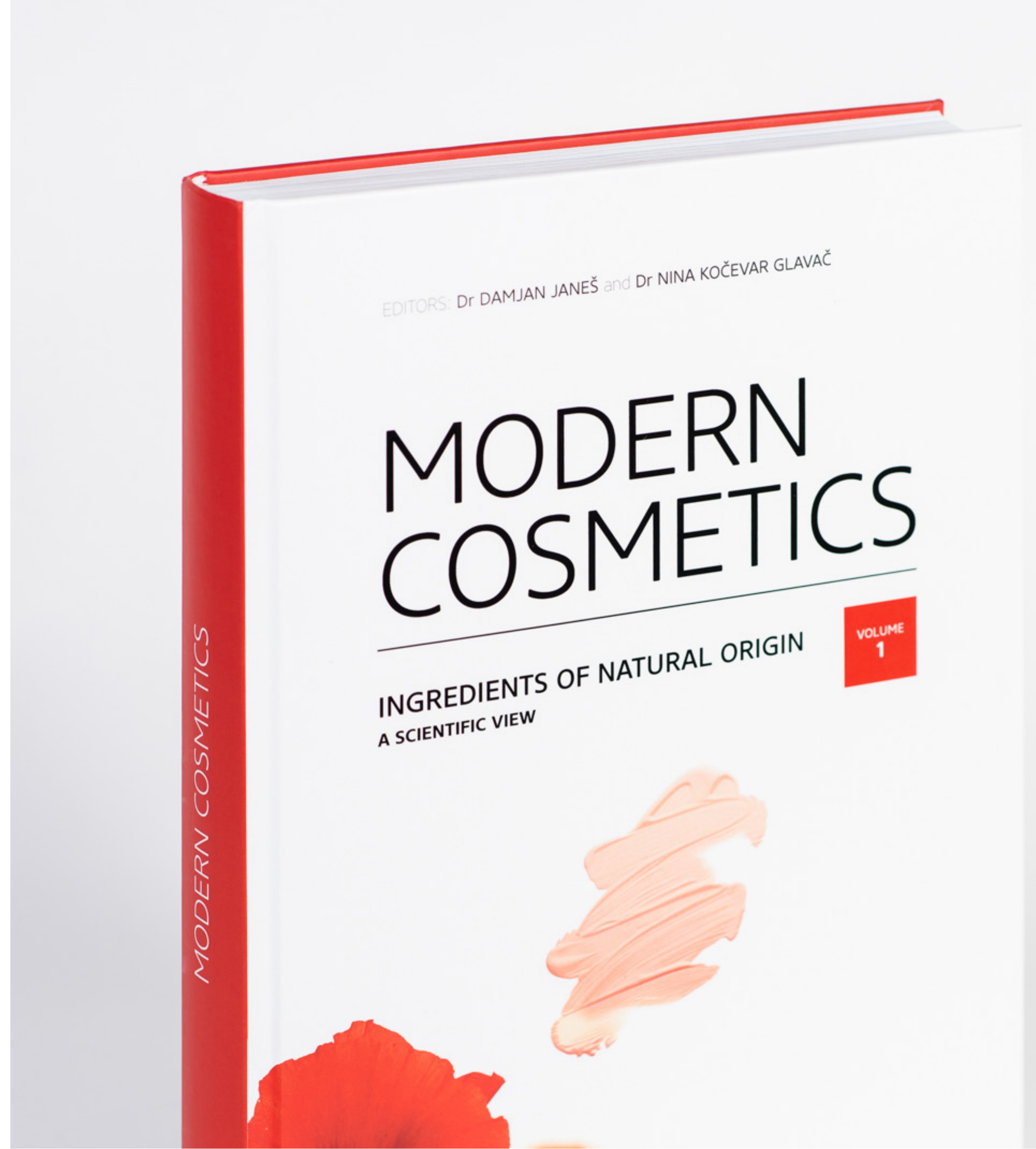


MODERN COSMETICS BOOK REVIEW

BOTANICAL FORMULATIONS

The authors claim Modern Cosmetics is “The world’s most comprehensive book about cosmetic ingredients of natural origin. Written by scientists.”

The book comes as a hardback, in A4 format, and around 500 pages long.



So what is in it?

The first chapter is 'Natural Cosmetics - What is there to know'. Here they deal with definitions of cosmetics and discuss what natural and organic means. They also touch on European legislation and give a good overview of the different certifying bodies for natural and organic cosmetics in Europe. Its a good overview but doesn't go into too much detail, which is not a problem, as when it comes to certification, pointers are enough and often certifying bodies update their policies or guidance annually anyway.

The second chapter deals with the skin, its structure and function as well as the different skin types: oily, dry, combination, sensitive and mature. No book on cosmetic products should be without a section on the skin.

The third chapter looks at the types of delivery systems used in skincare: emulsions, gels, solutions to name a few. It goes into the benefits of each system and when to appropriately use each type of product. For instance the book talks about liposomes, their benefits, and their actions on the skin.

Chapter 4 gives monographs for some 60 different oils and butters. Each oil has details on the scientific names, common names and the INCI as well as the part of the plant it is extracted from. It gives information on its general characteristics including the fatty acid composition. **What is very helpful is that they give the mechanisms of action and use for the skin based on both anecdotal and traditional evidence and scientific literature.** This is invaluable for selecting oils for different

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KONJAC GUM

Other names: E425, glucomannan
INCI: *Glucomannan*, CosIng: skin conditioning, skin protecting

Natural source
konjac, *Amorphophallus konjac* K. Koch.,
Araceae (arum family): tuber

Konjac gum is produced from the tubers of konjac, a plant originating in Southeast Asia. The tubers contain 8 to 10% glucomannan. During the production of konjac gum, the tubers are rinsed, crushed, dried and then pulverised, and the glucomannan is finally rinsed with ethanol. It is mainly produced in China and Japan.

Characteristics
Konjac gum is a nonionogenic polysaccharide, containing 80% glucomannan that is composed of β -D-glucose and β -D-mannose. Its molecular mass is approximately 300 kDa. It is usually available as a white powder with a weak odour. Gel formation is based on the swelling of long molecules, which increase in volume by up to two hundred times when they come in contact with water. Konjac gum is not sensitive to temperature, so it can be dispersed in a hot or cold aqueous phase. Its characteristics are also not dependent on the pH.

Mechanism of action and use
Konjac gum is mainly used as a thickener in hydrogels and a stabiliser in emulsions. It is most frequently found in shower gels, shampoos and skin care products. It makes the consistency of a cosmetic product less sticky and its structure creamier compared with guar gum. It creates a thin protective layer on the skin and restores moisture. For the thickening of gels, konjac gum is usually used in concentrations of 0.5 to 0.8%, and for emulsion stabilisation in concentrations of 0.1 to 0.5%. Its thickening power and stabilisation properties are both increased by the addition of xanthan.

A major consumer of konjac gum is the food industry. It is also found in products for reducing body weight because it increases in volume in the stomach and induces a feeling of satiety. It can be used in patients with diabetes, as it does not raise sugar levels.

TRAGACANTH

Other name: E413
INCI: *Astragalus Gummifer Gum*, CosIng: binding, emulsion stabilising, film forming, masking, viscosity controlling

Natural source
– tragacanth, *Astragalus gummifer* Labill.,
Fabaceae (pea family)

Characteristics
Tragacanth is an anionic polysaccharide containing 60 to 80% bassorine, 20 to 35% tragacanthine, 2 to 3% starch, 1 to 4% cellulose and up to 15% water. It is usually available in the form of a powder. It partially dissolves and partially swells in water. It provides the most viscosity among all gums, and forms a solid gel at higher concentrations (2 to 4%). An aqueous solution of tragacanth has a slightly acidic pH and is stable up to a pH of 2, even at higher temperatures. Tragacanth is prone to microbiological contamination, even in the presence of preservatives.



skin types or skin problems. Pay attention to information given in a lighter text, often some very good advice is given on synergies with different oils, ideal skin types and interactions with other ingredients. I really loved these nuggets of information.

Chapter 5 is all about emollients and occlusives. Here they take a closer look at various plant and floral waxes, ceramides and sterols. Again they talk about melt point, plant origins, process of extraction and the mechanism of action. For instance, in the case of sterols they state, 'Sterols are used as emollients for the repair of an impaired barrier function at concentrations ranging from 0.1-1%. Cholesterol is also used as a (co) emulsifier in w/o emulsions.'

Chapter 6: Emulsifiers and surfactants for hair and skin cleansing is a small chapter as the authors assert wholly natural emulsifiers are 'extremely limited.' This has information on wool alcohol, lecithin and saponins.

Chapter 7 is all about thickeners, namely those that will thicken the water phase of a product such as gums, pectins and mucilages. I have a particular interest in water-based thickeners so I enjoyed flicking through this chapter. It gives hints and tips on how to add polysaccharides so to get the most out of them, but also what to look out for in terms of compatibility with other ingredients. Since polysaccharides are one of the most important ingredients when it comes to formulating, this is an invaluable chapter.

Chapter 8 looks at moisturisers and humectants with monographs for such things are hyaluronic acid, different proteins from both animal and vegetal sources, urea, sea salt, PCA and the most

common one: glycerine. There are a few others and it covers most bases. **There are good nuggets of information, even for me, such as sorbitols tendency to create a translucent appearance if used in high quantities.** I have used sorbitol once in my formulating life so this information was new to me. I also didn't realise it was less sticky than glycerin and it is nice to know I have another alternative to the ingredients I normally use.

Chapter 9 is a relatively small chapter on acids for pH adjustment. I tend to use lactic acid and citric acid to adjust pH for most of my projects and this has given me some ideas in terms of broadening my horizons; one day I might try using tartaric acid!

Chapters 10 and 11 look at antioxidants and vitamins for the skin, respectively. The intro to 'Antioxidants' goes into some detail explaining what oxidation and oxidative stress is, and although it does not go into depth, the main ideas are covered. They also make good connections with chelators and their benefits to the skin and the cosmetic product. Under 'Vitamins' they have monographs for the main ones used in skincare and they also discuss their effects when taken internally.

Chapters 12 to 18 look at 'cosmetically active ingredients' and their particular 'activity' So the focus is on choosing a certain ingredient for a particular function whether that be something that acts as a tonic, antimicrobial (these are essentially preservatives that are marketed as having another function), anti-inflammatory, improving skin circulation (things like arginine, camphor, capsaicin, menthol and so on), skin lightening and self tanning. These chapters come in handy if you are looking to make a product targeted at a particular skin complaint or function and you are at odds as to what to include.



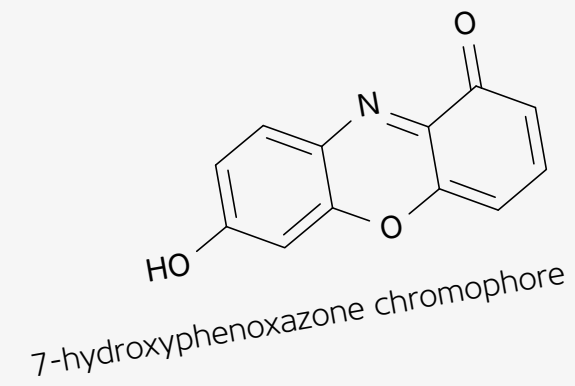
Henna has beneficial effects against dandruff. Traditionally, it is used as an antimicrobial ingredient and to improve wound healing. Lawsone absorbs ultraviolet radiation, and is therefore cited as a possible ingredient in cosmetic products for sun protection. There is, however, no reliable data on its effectiveness.

Henna is mentioned as far back as the time of the ancient Egyptians, who used it for colouring the hair and nails. Mohamed supposedly coloured his beard with henna.

LITMUS

Other names: E182

Litmus and roccella lichen extract are not included in the CosIng database.



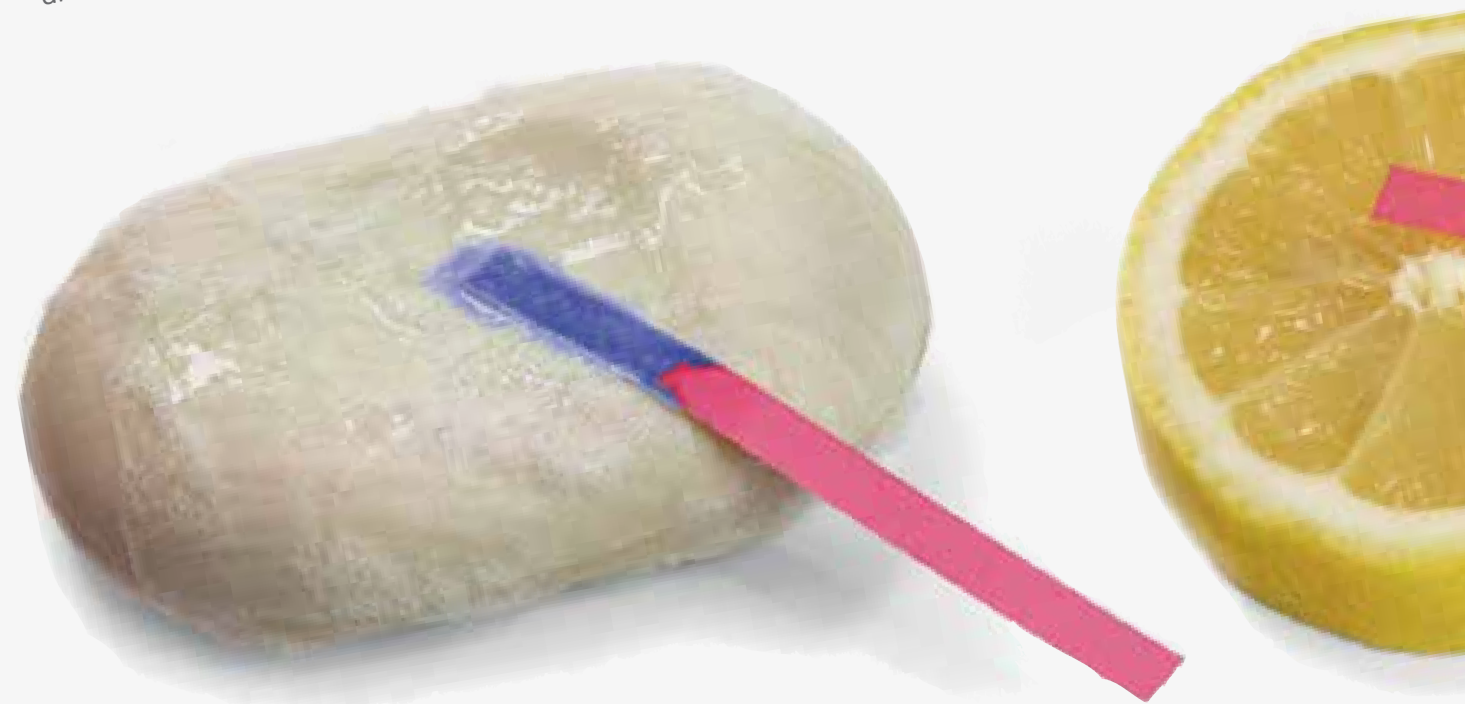
Natural source
– roccella lichen, *Rocella tinctoria* DC., Roccellaceae: thallus (5 to 8%)

Characteristics
Litmus is a mixture of approximately fifteen water-soluble red, purple and colourless compounds. These are not present in living plants, but form in the processes of fermentation and oxidation. They are derivatives of orcinol (i.e. 5-methylresorcinol).

Litmus is obtained by the pulverisation of roccella lichen, followed by fermentation in water containing calcium hydroxide, ammonium carbonate and potassium carbonate. The mixture is initially brown, then violet, and turns blue after three weeks. Chalk and gypsum are added to the filtrate, and the mass is then formed into cubes and dried. Other lichens produce similar dyes, e.g. archil (reddish-violet), orcein (reddish-brown) and orchil (violet-blue).

Mechanism of action and use
Litmus is used as a bluish-violet dye in decorative cosmetic products, e.g. eye shadows and decorative lip products.

The most famous feature of litmus is its changing colour depending on the pH value. It is therefore bound to paper as a pH indicator. It is red at a pH of 4.5 and blue at a pH above 8.3. It is also used for colouring liqueurs, wines and cakes, and in the paper industry.



Chapter 19 is about sunscreens, it doesn't go into depth and only mentions a few sunscreens allowed in natural cosmetics and they talk briefly about the importance of sun protection.

Chapter 20 is about exfoliation, in particular chemical peels. They do not go into detail regarding how to formulate with chemical peels like glycolic acid, bromelain lactic acid etc, but they do touch on the safety issues and the restrictions on formulating these types of products. It would be good if they gave more thorough detail. All the usual subjects were discussed and there were one or two ingredients I had never heard of before.

The penultimate chapter is about natural colourants, plant, mineral and animal derived. I have been looking at natural pigments recently and thought I knew most of them, seems I have a lot to learn. It never occurred to me that litmus paper is named as such due to the Litmus otherwise known as roccella lichen.

The final chapter, and probably the one of least interest to me is the chapter on sweeteners, those things you might use to sweeten oral care products. It has all the -itols and stevioside. I am sure that if I am making toothpaste, this chapter will come into use.

What I enjoy about the book is that you can tackle your research in a number of ways. They arrange the book to allow you to either research a particular ingredient or look at it from a skin issue or formulation point of view. If you want to find out about a particular common oil or butter, you will get info on the ideal skin type; similarly you can look at the action or skin problem you want

to solve and tackle your inquiry from that angle. It would be good if they had a quick look chart so you can easily find oils and actives for skin type or skin complaint.

There are lots of gems of wisdom throughout the book. Because it is fundamentally a reference book for natural ingredients it will not show you how to formulate; it will give tips and pointers when it comes to selecting and handling those ingredients. The last few months I have indeed dipped in and out of this book and have found it valuable as a quick reference guide to natural ingredients.

You can buy your own copy from the [Modern Cosmetics website](#).

[original review]



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