

Introduction

Well done! You're holding the first compilation book of Allured Publishing on *Skin Barrier: Chemistry of Skin Delivery Systems* in your hands. Apart from two completely new chapters on skin delivery written specifically for this volume, this book contains articles that have been published over the last several years in *Cosmetics & Toiletries* magazine, *Perfumer & Flavorist* magazine and *Global Cosmetic Industry* magazine. These Allured magazines cover a wide range of subjects and have a different viewpoint on our industry. Unique about this compilation is that it combines in a structured way what the different disciplines of these magazines have to offer in a specific topic: from the more fundamental science background of skin delivery to the more applied side of cosmetic product forms, such as manufacturing and production. It was an absolute pleasure going through years of past issues of these magazines and re-reading these articles. Some brought back good memories, whereas the content of others was forgotten or even novel for me as, after all, interests change with time.

This book starts with an introductory section (Section 1.1, "Basics of Skin Penetration") that discusses the theory of skin delivery in an easy-to-digest manner, followed by some necessary information on the skin lipids that make up the skin barrier (Section 1.2, "Skin Lipids"). When delivering chemicals through the skin, this barrier function of the skin needs to be temporarily removed or reduced to allow active ingredients to penetrate to the deeper layers of the skin. It is therefore useful to understand how the barrier of the skin is normally maintained or repaired which is the subject of the next section (Section 1.3, "Skin Barrier Maintenance and Repair"). This is followed by a couple of chapters in which the latest in skin delivery measurement methodology is discussed (Section 1.4, "Skin Delivery Measurement Techniques"). Finally, section 1.5, "Future Developments in Skin Delivery", discusses future trends in skin delivery, from future possibilities of liposomes to new measurement techniques to where the emphasis should be in future skin delivery research.

Many different skin delivery systems exist and these are discussed in Section 2, "Delivery Systems." This section is therefore much more practical than the introductory section. Based on their physical product

form, skin delivery systems can be grouped and are discussed in that way. Emulsions that have a monomolecular layer of surfactant separating two immiscible liquid phases constitute the first group and are discussed in Section 2.1, “Emulsions as Skin Delivery Systems.” Vesicular structures like liposomes that have either a single bilayer or multiple bilayers separating two liquid phases that are in principle miscible form the second group (discussed in Section 2.2, “Vesicles as Skin Delivery Systems”), whereas encapsulating systems that typically have a hard outer shell make up the third group (discussed in Section 2.3, “Encapsulation as a Means to Enhance Skin Delivery”). Then there are still a couple of cosmetic product forms left that do not fit this classification and this ‘alternative’ group of skin delivery systems is discussed in Section 2.4, “Alternative Skin Delivery Systems.”

Section 3, “Special Chemistry in Delivery Systems,” discusses specific chemicals that can be used in all these systems. There are separate sections on cyclodextrins (Section 3.1, “Cyclodextrins”) and silicones (Section 3.2, “Silicones”), whereas Section 3.3, “Solvents, Surfactants and Polymers,” combines remaining chemistries like solvents, surfactant and polymers that can be used to enhance the delivery of cosmetically active ingredients.

One issue, however, is very important to understand about skin delivery, which does not really shine through in any of these chapters and that is why I mention this here. Skin delivery is the process of bringing the right chemical to the right site (the site of action) at the right concentration for the correct period of time (see chapters 2 and 30). The definition of a skin delivery system is therefore very wide but you will find all aspects of this definition represented in this book. There are chapters describing systems like the cyclodextrins and mica particles that protect labile chemicals from oxidation, ensuring that the right chemical is delivered (see chapters 38 and 39). There are chapters illustrating fibers and cyclodextrins containing fragrances from which a fabric is made, or that are deposited onto clothes, ensuring the site of action is reached (see chapters 50 and 51). There are chapters outlining the necessary steps in formulation design to ensure that sufficient active ingredient penetrates the skin, so that the right concentration is reached at the target site (see chapters 25 and 58). And finally, there are chapters describing chemistries such as the silicones ensuring that sufficient concentrations of active remain on the target site for the correct period of time (see chapters 40 and 57). The reader should keep the various aspects of skin delivery in mind when reading the chapters.

It is interesting to see that in a relatively short period of time, all these various aspects of skin delivery have been discussed in *Cosmetics & Toiletries* magazine, *Perfumer & Flavorist* magazine, and *GCI* magazine. With roughly five articles per issue of *Cosmetics & Toiletries* magazine,

the 61 chapters of this compilation represent more than a whole year of this monthly publication. But this compilation does more than the single articles individually offer; it combines these articles in such a way that the reader can get this wider perspective of what a skin delivery system really is and how to create one. Readers that want a more thorough discussion of the science behind these cosmetic delivery systems are referred to “*Science and Applications of Skin Delivery Systems*”, another book on skin delivery systems recently published by Allured Publishing. Together they describe the whole world of cosmetic skin delivery systems. I hope you will find in this book what you are looking for and a lot more. Only in that way will this book have delivered its value!

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