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Editorial

Fine Chemicals from Natural Sources with Potential Application in the Cosmetic/Pharmaceutical Industry

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There is no doubt that chemistry has provided countless products that have improved people's lives in almost every aspect. Unfortunately, some of these products are proving difficult to dispose of, are not biodegradable or are toxic. As a result, there is an increasing emphasis on reducing the number of synthetic products or additives and replacing them with natural products or additives [1]. Through the use of physical, chemical and biochemical processes, these raw materials can be transformed into intermediates that can then be used to produce high-quality chemicals, polymers, lubricants, solvents or surfactants. Significant effort has been also devoted to developing new processes to replace those that previously used fossil fuels.

The pharmaceutical, cosmetic or food industries are particularly interested in natural raw materials, as natural sources have long been a reservoir of fine chemicals. Natural products are an interesting and largely untapped source for developing potential new cosmetic ingredients. In some parts of the world, natural products still form the basis for the production of pharmaceuticals and cosmetics. In developed countries, the interest in pharmaceuticals/cosmetics based on plant-based raw materials has been increasing for many years [2]. As a result, there is also a growing global market demand for natural cosmetic ingredients such as plant extracts that can be used for depigmentation, anti-aging treatments, and other cosmeceutical applications [3–5].

Eleven manuscripts (eight articles and three reviews) were submitted for consideration to be published in the Special Issue "Fine Chemicals from Natural Sources with Potential Application in the Cosmetic/Pharmaceutical Industry", all of which were subjected to the *Cosmetics* review process. These contributions are briefly summarized below:

In the first contribution (1), the herb *Serratula coronata* was shown to be a valuable source of bioactive phytoecdysteroids that could be used for the development of skin care formulations. The results indicated that the cosmetics containing *S. coronata* extract were chemically and microbiologically stable, which contributed to their safety. Their effectiveness was due to the transdermal permeability of 20-hydroxyecdysone. In addition, the extract from *Serratula coronata* can support the treatment of various inflammatory skin diseases.

The authors of the second contribution (2) have taken advantage of the fact that environmental conditions provide Dead Sea Water (DSW) with a unique composition of ions in concentrations that produce comprehensive positive effects on skin health. The authors reviewed two potential modes of action of DSW, as well as the biological function of DSW and its associated complex in dermatology and skin care. The paper also describes the improvement in chronic skin diseases and the skin care efficacy of DSW and related complexes. In particular, these complexes can counteract skin aging in three different ways (promoting keratinocyte rejuvenation, photoprotection and raising cellular energy), indicating their great potential for application in the development of anti-aging cosmetics.

The third contribution (3) presents the possible, available and most commonly used methods for obtaining encapsulated fragrances and aromas, which can then be used in various industries. The paper points out the advantages and disadvantages of each of the

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described encapsulation methods, in order to facilitate the selection of the appropriate technology for the production of encapsulated fragrances and aromas.

Paper (4) is focused on the development of a topical formulation with the potential to relieve arthritis complaints. The authors tested a combination of two active ingredients, icariin from *Epimedium* L. extract as a potential promoter of chondrogenesis and glucosamine sulfate as a precursor of cartilage tissue. Permeation studies confirmed the skin permeation potential of both substances; however, the in vitro release test did not accurately reflect the degree of skin permeation.

The authors of paper (5) focused on the fact that annual wine production is accompanied by the generation of large amounts of residues, which are often disposed of and not valorized. To date, various studies have been conducted on grape pomace, but less attention has been paid to other residues, such as wine lees and diatomaceous earth, which is used in wine filtration. Twenty-nine phenolic compounds, including twelve anthocyanins, were tentatively identified in the residues, with red grape pomace showing the greatest diversity of compounds. Diatomaceous earth showed the highest content of non-anthocyanin phenolic compounds, being particularly rich in flavan-3-ols and myricetin-O-hexoside, as well as two anthocyanins.

The authors of paper (6) demonstrated the potential of olive pomace as a source of an innovative ingredient (semi-solid paste) for use in facial mask formulations, which can be used as a sustainable source of both lipids and polar bioactive compounds. The lipid fraction of this ingredient is a source of antioxidants (such as vitamin E) and water-soluble compounds (such as phenols) that protect the skin from oxidative stress.

Paper (7) describes the properties of prepared oil-in-water (O/W) and water-in-oil (W/O) emulsions containing vitamins A, C and E at concentrations of 0.5, 1 and 2% by weight. Their pH and viscosity stability during storage were determined, as were the sunscreen and antioxidant properties of the obtained emulsions.

In paper (8), the authors confirmed the photoprotective properties of naringenin in human primary skin cells and demonstrated its ability to protect against pollution-induced skin damage by inhibiting MMP1, as well as CYP1A1. Combined with naringenin's ability to reduce pigmentation, it counteracts some of the major external features of skin aging caused by UVB radiation and pollution.

In paper (9), it was shown that bio-wax derived from hydroprocessing of crude palm oil shows great potential as a cosmetic ingredient. It can be used as an emollient, since it modifies the sensory properties of the developed formulations, and also as a thickening agent, since viscosity and lubricity showed a high dependence on the percentage of bio-wax used in the formulations studied.

The authors of paper (10) reviewed the antioxidant potential of catechins for use in cosmetic formulations and described the current status of clinical trials on catechins in cosmetics.

In paper (11), the overarching goal of the study was to evaluate the cytotoxic and antiproliferative activity of two herbal extracts of *Haberlea rhodopensis* Friv. and to compare the studied effects with those observed for the reference anticancer, non-selective compound doxorubicin. The authors observed a decrease in the inhibitory activity of both extracts compared to that of doxorubicin against all tested cell lines.

In conclusion, this Special Issue, "Fine Chemicals from Natural Sources with Potential Application in the Cosmetic/Pharmaceutical Industry", provides an up-to-date perspective on the use of natural products in the cosmetic/pharmaceutical industry.

Conflicts of Interest: The author declares no conflict of interest.

List of Contributions

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