



## Special Issue “Anti-Oxidant and Anti-Inflammatory Properties of Natural Compounds”

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### ► To cite this version:

Othmane Merah. Special Issue “Anti-Oxidant and Anti-Inflammatory Properties of Natural Compounds”. *Cosmetics*, 2023, 10 (3), pp.80. 10.3390/cosmetics10030080 . hal-04105076

**HAL Id: hal-04105076**

**<https://hal.inrae.fr/hal-04105076>**

Submitted on 24 May 2023

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Editorial

# Special Issue “Anti-Oxidant and Anti-Inflammatory Properties of Natural Compounds”

Othmane Merah <sup>1,2</sup> 

<sup>1</sup> Laboratoire de Chimie Agro-industrielle (LCA), Université de Toulouse, INRAe, INPT, 31030 Toulouse, France; othmane.merah@ensiacet.fr; Tel.: +33-5-3432-3523

<sup>2</sup> Département Génie Biologique, IUT A, Université Paul Sabatier, 32000 Auch, France

Throughout history, humans have utilized plants as conscious or unconscious sources of molecules for food, health and well-being [1,2]. With the evolution of human activity, the stresses generated, and the necessity of resorting to medicinal solutions to manage them, discovering and employing natural products has become crucial. Thus, the use of plants as a source of care and well-being has become increasingly vital.

Thiviya et al. [3] present one of the oldest plant families used for food, traditional medicine and cosmetics. They review the current scientific knowledge of many umbelliferous plants regarding their composition and their biological, anti-inflammatory, anti-ageing and anti-cancer activities; above all, they provide some examples of the research conducted on the application of antioxidants from this family in the cosmetics industry.

Kulawik-Pióro and Goździcka [4] present, in a review, cases of the utilization of herbal extracts in preparations for the prevention and treatment of radiodermatitis. Some of these extracts can be employed as cosmetic supplements. The dominant biological effects of these extracts are related to their antioxidant, anti-inflammatory and antimicrobial activities.

The Atlas pistachio tree, an endemic species of North Africa, is endangered. Nevertheless, El Zerey-Belaskri et al. [5] shed light on the application of Atlas pistachio oils in the development of novel formulations, and as sources of new ingredients and products inspired by indigenous knowledge. This focus may illuminate the plight of this species and generate interest regarding how it might be saved and perhaps exploited as a proven local source of antioxidants and anti-inflammatories.

Oils are often used as ingredients in moisturizing or regenerating creams. Few studies have shown the anti-inflammatory properties of plant oils. The study by Zemour et al. [6] examines the antioxidant and anti-ageing activity of three varieties of safflower grown in three successive years. The results highlight the applicative potential of safflower as a valuable source of oil in cosmetic formulations. The choice of variety and growing conditions have crucial influence on these activities. These results highlight the fascinating potential of safflower oil as a source of phenols, alongside its valuable antioxidant and anti-ageing activity, and its possible application in cosmetics.

*Arbutus unedo* L., also named the strawberry tree, is known for its fruits, which are consumed in several countries, and for its high content of bioactive molecules, such as polyphenols, flavonoids and monoterpenoids [7]. The effects of extracts from this species, when procured via various methods, are studied by Habachi et al. [8]. As expected, the method of extraction has an impact on the phytochemical composition of the extracts. Moreover, these extracts exhibit a promising whitening effect, with high anti-tyrosinase activities. In addition, their fascinating anti-inflammatory activity and absence of cytotoxicity have been reported.

It is established that air pollution has a substantial effect on human skin, indicating that each pollutant has a distinct toxicological impact on it. This pollution can cause oxidative stress that exceeds the antioxidant capacity of the skin. It can lead to oxidative damage and the premature ageing of the skin, depending on which pollutants the skin is repeatedly



**Citation:** Merah, O. Special Issue “Anti-Oxidant and Anti-Inflammatory Properties of Natural Compounds”. *Cosmetics* **2023**, *10*, 80. <https://doi.org/10.3390/cosmetics10030080>

Received: 27 April 2023

Accepted: 5 May 2023

Published: 16 May 2023



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exposed to. The application of naturally occurring antioxidants could help the skin to overcome this repeated aggression. Kim et al. [9] examine the possibility of utilizing the fermented extract of *Smilax china* leaves (FESCL) as an anti-pollution cosmetic material. FESCL significantly diminishes pollutant-induced luciferase activity at a concentration of 1%. This study reveals the applicative potential of FESCL as an anti-pollutant material in cosmetic formulations.

It has been previously proved that *Etlingera elatior* leaf extracts possess strong antioxidant activity and whitening and anti-aging properties, which make it an excellent source for cosmeceuticals. This is investigated in the study of Whangsomnuek et al. [10], which evaluates the efficiency of whitening cream containing both the flower and leaf extracts of *E. elatior* in human volunteers and the degree of skin irritation experienced. The results show that the application of creams formulated with the flower and leaf extracts of *E. elatior* significantly diminishes the quantity of melanin in the skin compared to non-treated skin. This finding indicates that the formulate cream is safe and effective for skin whitening.

The dried roots of *Sanguisorba officinalis* L., also called Sanguisorbae Radix (SR), are known to possess several properties often employed in traditional Chinese medicine. In a study by Jang et al. [11], the antioxidant compounds procured from an acetone extract of SR are isolated, and their anti-inflammatory effects and toxicity are studied in vivo. The various compounds isolated from the SR extract are able to inhibit nitric oxide, tumor necrosis factor alpha and prostaglandin production in a dose-dependent manner. This result demonstrates the potential of compounds extracted from Sanguisorbae Radix, and particularly quercetin, to provide non-toxic and anti-inflammatory biomaterial for the skin.

The economic problems of countries, current geostrategic conflicts, and humanitarian crises around the world are limiting the use of land for non-food purposes. The more efficient utilization of directly produced plant material, or unused or processed residues, appears to be an invaluable source of antioxidant molecules. Thus, in their review, Pereira et al. [12] detail the phytochemicals and biological and pharmacological activities of hops, and their potential application in skin care products. They also highlight the current interest in exploiting the rejected parts of hops and the by-products of the brewing industry, which possess applicative potential in the cosmetic industry.

Olive oil is known to be rich in polyunsaturated fatty acids and possess medicinal properties. The residues remaining after pressing are a precious source of polyphenols, which have many positive health effects. The work of Schlupp et al. [13] evaluates the cell viability, cell proliferation, anti-inflammatory and antioxidant properties of a phenol-enriched olive mill wastewater (OMWW) extract and its effect on an immortal keratinocyte cell line. It was discovered that this phenol-enriched extract exhibits excellent antimicrobial activity, and minimizes the formation of reactive oxygen species and the release of interleukin 8 in HaCaT cells. It also inhibits the growth of A375 melanoma nodules in the skin model. This study reveals that olive mill wastewater is a promising ingredient for dermal applications, and is able to improve skin health and have a positive impact on skin ageing.

These studies and reviews highlight the potential significance of plants as a source of invaluable compounds for application in the cosmetics industry, both by utilizing plant organs or the by-products of industrial processes.

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

## References

1. Sayed Ahmad, B.; Talou, T.; Saad, Z.; Hijazi, H.; Merah, O. The Apiaceae: Ethnomedicinal family as source for industrial uses. *Ind. Crop. Prod.* **2017**, *109*, 661–671. [\[CrossRef\]](#)
2. Thiviya, P.; Gamage, A.; Gama-Arachchige, N.S.; Merah, O.; Madhujith, T. Seaweeds as a Source of Functional Proteins. *Phycology* **2022**, *2*, 216–243. [\[CrossRef\]](#)
3. Thiviya, P.; Gamage, A.; Piumali, D.; Merah, O.; Madhujith, T. Apiaceae as an Important Source of Antioxidants and Their Applications. *Cosmetics* **2021**, *8*, 111. [\[CrossRef\]](#)
4. Kulawik-Pióro, A.; Goździcka, W.J. Plant and Herbal Extracts as Ingredients of Topical Agents in the Prevention and Treatment Radiodermatitis: A Systematic Literature Review. *Cosmetics* **2022**, *9*, 63. [\[CrossRef\]](#)

5. El Zerey-Belaskri, A.; Belyagoubi-Benhammou, N.; Benhassaini, H. From Traditional Knowledge to Modern Formulation: Potential and Prospects of *Pistacia atlantica* Desf. Essential and Fixed Oils Uses in Cosmetics. *Cosmetics* **2022**, *9*, 109. [[CrossRef](#)]
6. Zemour, K.; Labdelli, A.; Adda, A.; Dellal, A.; Talou, T.; Merah, O. Phenol Content and Antioxidant and Antiaging Activity of Safflower Seed Oil (*Carthamus Tinctorius* L.). *Cosmetics* **2019**, *6*, 55. [[CrossRef](#)]
7. Bajoub, A.; Ennahli, N.; Ouaabou, R.; Chaji, S.; Hafida, H.; Soulaymani, A.; Idlimam, A.; Merah, O.; Lahlali, R.; Ennahli, S. Investigation into Solar Drying of Moroccan Strawberry Tree (*Arbutus unedo* L.) Fruit: Effects on Drying Kinetics and Phenolic Composition. *Appl. Sci.* **2023**, *13*, 769. [[CrossRef](#)]
8. Habachi, E.; Rebey, I.B.; Dakhlaoui, S.; Hammami, M.; Sawsen, S.; Msaada, K.; Merah, O.; Bourgou, S. *Arbutus unedo*: Innovative Source of Antioxidant, Anti-Inflammatory and Anti-Tyrosinase Phenolics for Novel Cosmeceuticals. *Cosmetics* **2022**, *9*, 143. [[CrossRef](#)]
9. Kim, Y.-K.; Kang, D.-J. Anti-Pollution Activity, Antioxidant and Anti-Inflammatory Effects of Fermented Extract from *Smilax china* Leaf in Macrophages and Keratinocytes. *Cosmetics* **2022**, *9*, 120. [[CrossRef](#)]
10. Whangsomnuek, N.; Mungmai, L.; Mengamphan, K.; Amornlerdpison, D. Efficiency of Skin Whitening Cream Containing *Etlingera elatior* Flower and Leaf Extracts in Volunteers. *Cosmetics* **2019**, *6*, 39. [[CrossRef](#)]
11. Jang, Y.-A.; Hur, Y.; Lee, J.-T. Anti-Inflammatory Activity of the Active Compounds of *Sanguisorbae Radix* In Macrophages and in Vivo Toxicity Evaluation in Zebrafish. *Cosmetics* **2019**, *6*, 68. [[CrossRef](#)]
12. Pereira, O.R.; Santos, G.; Sousa, M.J. Hop By-Products: Pharmacological Activities and Potential Application as Cosmetics. *Cosmetics* **2022**, *9*, 139. [[CrossRef](#)]
13. Schlupp, P.; Schmidts, T.M.; Pössl, A.; Wildenhain, S.; Lo Franco, G.; Lo Franco, A.; Lo Franco, B. Effects of a Phenol-Enriched Purified Extract from Olive Mill Wastewater on Skin Cells. *Cosmetics* **2019**, *6*, 30. [[CrossRef](#)]

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