

EDITORIAL

Natural Products as Health Promoters

Given the recognized health benefits of natural matrices, the scientific community, in strong collaboration with the industry, has been exploiting natural resources in search of bioactive molecules. These bioactive molecules, such as polyphenols, vitamins, and carotenoids, are responsible for the health-promoting effects of plants, mushrooms, fruits, *etc.* The main bioactive attributes are related to their antioxidant, antimicrobial, anti-inflammatory, and antitumoral properties, among many others. Therefore, extraction, purification, and stabilization of these molecules are major milestones for academia, aiming at their usage as health promoters.

Additionally, natural products present fewer harmful effects, thus creating a range of opportunities and applications for these raw materials. Although there are several studies regarding the efficiency of natural agents in preventing chronic diseases, there is still a lack of clinical trials to validate those effects in necessary, recommended, safe, and active doses.

Moya Moreira *et al.* presented a review of recent literature on fish protein hydrolysates (FPHs). They found most FPHs to be antioxidants, antimicrobials, anticancer, and antihypertensive agents, and that their activity depended on different factors (hydrolysis conditions, fish species, fractionation, isolation of specific peptides, *etc.*). Moreover, they researched strategies to improve the bioavailability of peptides. They found that encapsulation and film application could improve bioavailability and bioactivity, but also favor a controlled release for food, packaging, or drug applications [1].

Similarly, Amarowicz and Pegg focused on lentils (*Lens culinaris* L.) as natural products to research their effects on health promotion. They highlighted a high number of phenolic compounds, including phenolic acids, flavonoids, saponins, and phytic acid. They described how the lentils' active compounds and bioactivities change during technological processing, germination, and fermentation. Antioxidant, anti-inflammatory, anti-enzymatic, immunomodulatory, and antihypertensive activities were reported as the most remarkable in lentils [2].

Sousa *et al.* also studied proteins obtained from natural products, particularly edible mushrooms. The authors described in detail the conventional and non-conventional extraction methods and bioactivities of the most relevant proteins in mushrooms: lectins, fungal immunomodulatory proteins, ubiquitin-like proteins, and enzymes. Their bibliographic work highlighted the need to identify and characterize new macromolecules of macrofungal origin, focusing on the biomedical potential of this "next-generation food" [3].

Finally, Ueda *et al.* focused on the new perspectives of using natural agents to combat the resistance of specific bacterial strains, namely methicillin-resistant *Staphylococcus aureus* (MRSA). The authors mentioned the current problem of antibiotic resistance and the defense mechanisms of MRSA. Due to the limited capacity against this threat, the use of plants containing molecules with high antimicrobial activity is emphasized. The efficiency compared to traditional antibiotics has been discussed in this paper, and the combined use of natural and synthetic compounds has been proposed for their synergistic effect to combat the lower effectiveness of antibiotics [4].

Overall, this special issue: "Natural Products as Health Promoters" involves articles related to natural agents obtained from plants, mushrooms, and fruits, and also from industrial bioresidues/biowaste, focusing on their extraction and bioactive evaluation through chemical, biological, or biochemical methods in order to evaluate their *in vivo* and *in vitro* bioactivity, as well as on their clinical and nutritional trials. This thematic issue will provide scientific advances regarding the bioactive capacity of natural molecules, aiming at their use in the pharmaceutical and food industry.

REFERENCES

- [1] Thaysa Fernandes Moya Moreira, Odinei Hess Gonçalves, Fernanda Vitória Leimann, and Ricardo Pereira Ribeiro. Fish protein hydrolysates: Bioactive properties, encapsulation and new technologies for enhancing peptides bioavailability. *Curr Pharm Design* 2023; 29(11): 824-36.
- [2] Ryszard Amarowicz and Ronald B. Pegg. Lentils (*Lens culinaris* L.) as a source of phenolic compounds - their content, changes during processing, antioxidant and biological activities. *Curr Pharm Design* 2023; 29(11): 852-64.
- [3] Ana Sofia Sousa, Helena Araújo-Rodrigues, and Manuela Estevez Pintado. The Health-promoting potential of edible mushroom proteins. *Curr Pharm Design* 2023; 29(11): 804-23.
- [4] Jonata M. Ueda, Catarina Milho, Sandrina A. Heleno, Antón Soria-Lopez, Maria Carpena, Maria José Alves, Tânia Pires, Miguel A. Prieto, Jesus Simal-Gandara, Ricardo C. Calhelha, Isabel C.F.R. Ferreira and Lillian Barros. Emerging strategies to combat methicillin-resistant *Staphylococcus aureus* (MRSA): Natural agents with high potential. *Curr Pharm Design* 2023; 29(11): 837-51.

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