Natural Products Research in Latin America: Beyond the Screening

Latin America accounts for more than 60% of the world’s biodiversity, with seven of the twenty-five regions recognized as biodiversity hotspots prioritized for conservation, four of which are leading hotspots in terms of endemism [1, 2]. This outstanding characteristic has promoted natural product research throughout the region with numerous promising results [1].

Natural product research played a key role in the discovery of top-selling drugs, like statins, angiotensin receptor antagonists, angiotensin-converting-enzyme inhibitors, and most anticancer and antibacterial drugs [3].

However, effective discovery and development of novel drugs require multidisciplinary collaboration. For Latin America, a close collaboration with countries involved in advanced drug discovery and development has been crucial for moving the results of initial screenings to the next level. These collaborations have been accomplished through diverse strategies, either by large multinational collaborative programs like the regional program “Science and Technology for Development” (CYTED) and the International Cooperative Biodiversity Group (ICBG) program [1,3] or by strategic alliances formed with specialized academic partners.

Although Latin American countries have made large investments in research and development (R&D), representing 3.4% of the world’s expenditure in this sector in 2013 [4], very few countries have efficiently placed products in the market.

The aim of this special issue is to highlight areas of research within natural products that attempt to go beyond the traditional screenings and bring novel perspectives into the field of natural product research in Latin America.

Latin America, with its rich biodiversity, a large number of academic research laboratories, highly qualified scientists, and its countless screenings, is still lagging behind more advanced economies which have been successful in taking their products from the bench to the market. Is there a major deficiency in our government policies to incentivize R&D and commercialization? Is there a lack of technical capacity, insufficient investment, or no interest from the industry that perceives a much higher risk to further develop natural products found in academia? These issues have been put into perspective by Prof. Dr. Rathnam Chaguturu, who discussed critical aspects needed to close the existing gaps between academic natural product research and the plant-based pharmaceutical industry. This perspective piece presented a case of successful international collaboration between the United States and Panama for developing joined programs aimed at screening natural products, validating ethnomedical information, and seeking strategies to transform those results into new drugs.

In order to connect basic research to industry, it is critical to provide key components that will facilitate the process of the development of a new drug. For instance, academic laboratories may select and classify appropriate chemical markers to assure the quality and safety of herbal drugs. Moreover, the development of validated, simple, and sensitive methods for simultaneous quantification of chemical markers may reduce the risk associated with working with complex chemical mixtures and increase the interest of an industrial partner. The work of Rivera-Mondragon et al. highlighted the importance of having well-validated methods for the quality assurance of herbal drugs like the fruit of *Crescentia cujete*. In the same line, the perspective piece prepared by Dr. Calderon points out the need to build a complete quality system around the manufacture of herbal supplements, especially those which have gained importance during the recent outbreak of SARS-CoV-2.

The potential for finding novel medicinal applications for natural and semisynthetic products from traditional food sources was highlighted by Lakey-Beitia et al. in a mini-review of non-conventional carotenoids like the cryptcapsins from *Pouteria sapota*, showing evidence of neuroprotection.

Natural product research for food security is another priority area addressed by Latin-American scientists. The search for natural products capable of protecting crops of economic importance from aggressive pathogens like fungi has been an important area of research covered by Derita et al.
Latin America is a hotspot for biodiversity and the source of the most promising natural products. Research scientists from this region have made valuable contributions in many fields related to natural products. They are also experienced in achieving synergy with international academia and industry targeting the industrial potential of natural products within their own countries.

With all its resources and accomplishments, Latin America is ready to go beyond natural product screenings and adventure into promoting industry based on academic research.

REFERENCES


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