A review on the feedstocks for the sustainable production of bioactive compounds in biorefineries

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Since 2015, the Sustainable Development Goals of the UN established a route map to achieve a more sustainable society, pushing industry to aim for sustainable production processes [1]. Biorefineries have been studied as the technological scheme to process integrally renewable resources [2]. The so-called “bioactive” compounds have been of high interest, given their high added value and their application in pharmaceutical, health, and cosmetics, among others. However, there are still elements to be addressed in order to consider them as economic drivers of sustainable processes. First, bioactive compounds can be produced from many sources and it is important to identify raw materials for this purpose. Second, a sustainable production process should consider also valorizing the remaining components. Finally, the availability of the feedstock plays an important role that affects the scale of the process. Based on these, this work consisted in a review on the feedstocks for the sustainable production of bioactive compounds in biorefineries covering elements as the type of bioactive compound, composition, and availability, among others. Then, some example biorefineries are proposed using different types of raw materials (wheat straw, hemp, etc.) and by-products. As main conclusion, it was observed that multiple raw materials have the potential of obtaining bioactive compounds that can become economic drivers of biorefineries. This is an interesting outlook, given that high added-value economic drivers allow decreasing the scale and considering small-scale biorefineries close to the production of the feedstock.

[1] UN Development Program, “The 2030 Agenda for Sustainable Development,” 2015. [Online]. Available: https://sustainabledevelopment.un.org/?menu=1300. [Accessed: 22-May-2019].

[2] S. Serna-Loaiza, C. A. García-Velásquez, and C. A. Cardona, “Strategy for the selection of the minimum processing scale for the economic feasibility of biorefineries,” *Biofuels, Bioprod. Biorefining*, vol. 13, no. 1, pp. 107–119, 2019.