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Contribution of the Corn Milling Industry to a Global and Circular Economy

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Abstract : The concept of the circular economy is focus on the importance of providing goods and services sustainably. Thus, in a future it will be necessary to respond to the environmental contamination and to the use of renewables substrates by moving to a more restorative economic system that drives towards the utilization and revalorization of residues to obtain valuable products. During its evolution our industrial economy has hardly moved through one major characteristic, established in the early days of industrialization, based on a linear model of resource consumption. However, this industrial consumption system will not be maintained during long time. On the other hand, there are many industries, like the corn milling industry, that although does not consume high amount of non renewable substrates, they produce valuable streams that treated accurately, they could provide additional, economical and environmental, benefits by the extraction of interesting commercial renewable products, that can replace some of the substances obtained by chemical synthesis, using non renewable substrates. From this point of view, the use of streams from corn milling industry to obtain surface-active compounds will decrease the utilization of non-renewables sources for obtaining this kind of compounds, contributing to a circular and global economy. However, the success of the circular economy depends on the interest of the industrial sectors in the revalorization of their streams by developing relevant and new business models. Thus, it is necessary to invest in the research of new alternatives that reduce the consumption of non-renewable substrates. In this study is proposed the utilization of a corn milling industry stream to obtain an extract with surfactant capacity. Once the biosurfactant is extracted, the corn milling stream can be commercialized as nutritional media in biotechnological process or as animal feed supplement. Usually this stream is combined with other ingredients obtaining a product namely corn gluten feed or may be sold separately as a liquid protein source for beef and dairy feeding, or as a nutritional pellet binder. Following the productive scheme proposed in this work, the corn milling industry will obtain a biosurfactant extract that could be incorporated in its productive process replacing those chemical detergents, used in some point of its productive chain, or it could be commercialized as a new product of the corn manufacture. The biosurfactants obtained from corn milling industry could replace the chemical surfactants in many formulations, and uses, and it supposes an example of the potential that many industrial streams could offer for obtaining valuable products when they are manage properly.

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