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SUMARIO / SUMMARY / RESUMO

Editorial

We begin this first issue of 2022 with the illusion of opening a space for the dissemination of information related to the environment in all its dimensions. From the most scientific field to practical cases supported by applied research in which knowledge transfer has been achieved.

This first issue presents a variety of important topics related, on the one hand, to the circular economy in terms of the revaluation of forestry and food industry waste. On the other hand, with the production of biofuels and fatty acids from algal biomass.

The first of the articles in this first issue deals with the reduction of unused residues from eucalyptus plantations, with the aim of introducing an eco-friendly natural and more energy efficient preservative in the food industry. This work presents a case study in which the validation of a preservative product based on eucalyptus essence for use in the red fruit food industry was proposed. In addition, a technological innovation in the analysis of the extraction yield of this essential oil is presented.

The following is an article on the development of new methods for the treatment and utilization of whey since, within the food industry, it is a waste whose volume is of certain relevance. In Spain alone, 1,726,000 tons of this waste are generated annually. Taking into account that whey is considered a highly polluting waste if it is directly discharged into the environment due to its high organic matter content, it is doubly important to convert it into value-added by-products. In this case, the study carried out to obtain a biostimulant liquid for the agricultural sector and a covering liquid for the canning sector from this waste is presented.

The third article remains, like the previous ones, in the context of the circular economy and presents the first phase of a project based on the use of waste from the Cantabrian food sector (cereal waste from the spirits industry and whey) to manufacture an edible, biodegradable, and compostable plastic substrate as an alternative to the current production of plastics. This first study allowed checking both the technical and economic feasibility for its future implementation and, although it is estimated that the business profit margin would not be very high, the positive environmental impacts would be enough to support its implementation.

The first of the articles that deals with the utilization of algal biomass is presented below. This fourth article presents the methodology for obtaining biofuels from the microalgae Chlorella vulgaris. This option, viable to avoid the depletion and environmental problems caused by fossil fuels, requires the capacity to cultivate this raw material. Therefore, this study included the cultivation and reproduction aspects of this microalgae identified as one of the best triglyceride-producing-microorganisms mainly used to obtain biofuels such as biodiesel and bioethanol. In this study, the suitability of this species was demonstrated, although it is necessary to further investigate the best cultivation method in order to obtain a higher yield.

Finally, the fifth article presents the production of biofuels but specifically from fatty acids. Biodiesel, for example, is a mixture of fatty acid methyl esters (FAME) that can substitute diesel and is obtained from different raw materials, such as biomass. In this work, the variation of certain biochemical and FAME properties of Chlorella vulgaris due to the effect of hydrodynamics in column photobioreactors, alternating aeration flows and continuous white light, was analyzed. In addition, the shear rate was analyzed to examine the probable presence of hydrodynamic stress.

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