**Continuous Extraction of Olive leaves for the recovery ofbioactive compounds**

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**ABSTRACT**

The biorefinery concept is gaining a lot of traction recently due to the need for technologies that utilize all material streams even the “unwanted” wastes. Our laboratory has successfully extracted hydroxytyrosol from olive leaves, a powerful antioxidant that can be used in the food industry as a supplement or a natural preservative, in the cosmetics industry and even in the olive oil industry to increase the concentration of hydroxytyrosol and therefore provide health claims to the product, which are given if the oil surpasses 300 mg per kg of olive oil. In the proposed process many steps are involved and for some of them it is very difficult to prevent losses of the valuable compound. For example, membrane separation is one of the steps used to increase the purity of the final extract and it achieves purities of over 65%, while without the membranes the maximum purity is about 40%, but inevitably decreases hydroxytyrosol in the final extract by 60 to 80%. This step inevitably decreases the recovery but if other steps are optimized, then the losses will be decreased. One of these steps is definitely the first step in the proposed scheme, the solid-liquid extraction. For the laboratory experiments, batch extraction is usually the preferred method because of ease of operation but this method has many losses of material firstly due to the material that cannot be extracted from just one solid-liquid contact and secondly due to the liquid that gets trapped in the solid matrix and cannot be reclaimed with just vacuum filtration. In this study, an efford was made to see if continuous operation is worth it despite the difficulties of operation. The results showed an increase of about 35% in phenolic recovery and a 25% increase in sugar content, which confirms that continuous operation is the most efficient method when trying to scale the process up.

**KEYWORDS:** Solid-liquid extraction, Continuous extraction, olive leaves, phenolics, hydroxytyrosol

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