

Various applications of processing of olive leaves waste extracted with RSLDE: a green technology

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Abstract.

There is no waste in nature. Everything that is produced has a purpose and everything that becomes waste can be transformed into a new resource, triggering a virtuous circuit that feeds itself. The circular economy of waste means a system in which the production-consumption-disposal process is overcome to replace it with a circular model, where the final waste product is re-introduced into the circulation as a secondary raw material. The logic to follow is that after consumption and before any disposal, it is necessary to activate virtuous processes such as reduce, reuse and recycling. This work focuses on the possible uses of a vegetable waste matrix, such as olive leaves.

The olive tree (*Olea europaea*) is a fruit tree, cultivated for more than 3,500 years for its fruits and edible oil. However, just like oil, olive leaf contains a high amount of polyphenols, in particular oleuropein, one of the most powerful natural antioxidants known and hydroxytyrosol, which also has powerful antiseptic properties. Therefore, olive leaf extracts, thanks to the presence of oleuropein associated with hydroxytyrosol, represent a powerful natural antioxidant, a valid ally of the cardiovascular system. In addition, olive leaves are an excellent regulator of the digestive system: they regulate intestinal transit and above all eliminate fungi and other unwanted parasites from our body. Starting from these premises, in this work, a green extraction technique such as rapid solid liquid dynamic extraction (RSLDE) is compared with conventional maceration to obtain an olive leaf extract rich in antioxidants to be used in various sectors.