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## A proposal for the sustainable treatment and valorisation of olive mill wastes

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Olive mill technology generates a considerable amount of both solid (olive pomace OP) and liquid by-products (olive mill wastewater OMWW) during olives milling season, usually between November and March. These wastes represent a great challenge for olive oil producers since they must find technical, environmental and economic solutions to manage these by-products. The aim of this work was to explore and propose a complete cycle of olive mill wastes treatment. Two sorbents based on olive pomace chemical activation, granular (GAC) and powdered (PAC) activated carbons were successfully synthetized and encapsulated in calcium alginate. The obtained gel beads (GAC-B and PAC-B) were tested as sorbents for gallic acid adsorption. Both sorbents showed great potential for gallic acid sorption; although PAC-B beads resulted to be the most efficient. The major efficiency presented by PAC-B beads for gallic acid removal was attributed to the basic character and high porosity of PAC. In view of an industrial application, PAC-B beads were used to treat OMWW with the aim to adsorb polyphenols from the effluent, and, at time, to reduce the contamination of so strongly polyphenols loaded effluents. The outcomes of this study attest proofs of great potential of PAC-AC beads for polyphenols removal. Briefly, this paper suggests a proposal for sustainable treatment and valorization of both olive mill wastewater and olive pomace, as they can be recycled and reused for own benefit of the industry.