

Title: **Assessment of polymeric resins for the recovery of polyphenols.**

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Dietary polyphenols have received a great attention among food scientists, nutritionists and consumers due to their roles in human health. The main reason for this interest is the antioxidant properties of polyphenols. Research in recent years strongly supports a role for polyphenols in the prevention of cancer and degenerative, cardiovascular and neurodegenerative diseases.

This research is part of a much broader project related to the valorization of different types of wastes from a circular economy perspective. Particularly, this research is related to the recovery of polyphenols from agri-food sector solid wastes such as fruits and vegetables. It focuses on the assessment of polymeric resins with different physicochemical properties by studying the behaviour of a synthetic mixture of representative polyphenols.

In first place, kinetic studies have been carried out with resins with different polymeric structures (PAD610, PAD950, PAD900, MN202, MN270 and Aurix 100) that show fast adsorption processes for most of resins. Moreover, it has been observed that extraction of gallic acid and hydroxytyrosol, which are more polar compounds, is less efficient than the others.

Secondly, there have been carried out studies about the ratio between the amount of resin and volume of solution and about the effect of pH. Those studies have proven that MN202 resin presents the highest retention capacity for all the compounds.

In addition, the adjustment of experimental data of gallic acid to Langmuir isotherm has been checked, showing an excellent fitting.

Lastly, preliminary elution studies have been also conducted and it has been found that after 60 minutes the recovery efficiency of many compounds is around 80%.

Keywords: polyphenols, resins, recovery, agri-food wastes, HPLC.