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Extraction of phenolic compounds from *Juglans regia* L. optimized by response surface methodology

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The studies on plant secondary metabolites extraction, namely phenolic compounds, are increasing due to their *in vitro* bioactivity and marked effects on oxidative process related to several health diseases. Moreover, they have been widely used in pharmaceuticals, functional foods and natural cosmetics [1].

The solid-liquid extraction of these compounds from biomass is usually carried out using organic solvents such as methanol, ethanol, acetone and ethyl acetate. In this context, microwave assisted extraction (MAE) is one of the most employed alternative extraction methods commonly using methanol or ethanol in different concentrations by dilution with water. Ethanol will be selected in this work due to its lower toxicity. In addition, this alcohol can be obtained from renewable sources and is safe for human consumption. Among the advantages reported for MAE are its lower extraction times and solvent consumption, when compared to conventional methods [2-4].

Our research group is interested in the green extraction of valuable compounds from biomass and there are previous evidences that walnut leaves are rich in phenolic acids and flavonoids [5]. In the present work, a 5-level full factorial Box–Behnken design was successfully implemented for maceration and MAE optimization, in which the ethanol concentration (*Et*), processing time (*t*), temperature (*T*), and solid/liquid ratio (S/L) were relevant independent variables. HPLC-DAD results showed that MAE is more effective extracting higher contents of phenolic compounds than conventional maceration in a lower processing time.

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