Recovery of antioxidant compounds from fermented raspberry pomace with *Lactobacillus* bacteria.

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Abstract:

Raspberries and its solid waste (seeds and peels) are recognized as a source of compounds with antioxidant activity, which are extracted using organic solvents; however, sometimes a pre-treatment is required to improve the extraction yield. An alternative is the vegetable matrix’s fermentation. The aim of this study was to evaluate the effect of *Lactobacillus* bacteria on antioxidant compounds recovery from raspberry pomace fermented in solid state.

Raspberry pomace was sterilized and then fermented with *Lactobacillus casei* or *Lactobacillus plantarum*, using 0.9 to 1 mg microorganism/g pomace and 37°C. A control (unfermented pomace) was done. After fermentation time, samples were extracted to recover the antioxidant compounds. Extraction was done at 50°C during 3 hours using water or water/methanol (1/1) as extracting solvent. Extracts were recovered, and the phenolic compounds content (TPC, according to Folin-Ciocalteau method) and the antioxidant capacity (AC, by DPPH method) were determined.

A 21 and 31% of increment in TPC of methanolic extracts were observed when fermentations were done with *L.casei* and *L.plantarum* respectively. These values are 50% when the extract is performed with water. In the case of AA, the values increased from 1.4 to 2.67 mg Trolox Equivalent /g dry pomace for samples extracted with water and from 6.3 to 8.4 for samples extracted with aqueous methanol. All the extracts show mainly cyanidin-3-sophoroside and cyanidin–3-glucoside.

These results demonstrate that solid substrate fermentation using lactic acid bacteria is a feasible alternative to improve the recovery of compounds with antioxidant activity.

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