

## HOW DOES ENZYMATIC TREATMENT AFFECT THE ANTIOXIDANT POTENTIAL OF SERIGUELA PULP?

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**Summary:** The modification of different food substrates by enzymatic processes can promote changes in the technological, nutritional, and functional properties of the matrix. Native fruits of the Brazilian biome are known as excellent sources of beneficial compounds to health, such as phenolic compounds, which have great potential to act as antioxidants. *Spondias purpurea* L., popularly known as seriguela, is a native fruit from South and Central America commonly found in northeastern Brazil. It is reported as an important natural source of bioactive compounds such as tannins, carotenoids, phenolic acids, and flavonoids. In this context, this work aimed to evaluate the effect of enzymatic treatment on the antioxidant properties of seriguela pulp. The enzyme treatment effects on the pulp were evaluated by applying the commercial enzyme FoodPro® CBL (blend of cellulases) from DuPont™ Danisco® Food Enzymes (IFF Company). The evaluated parameters included the addition of different enzyme concentrations (0.25 and 0.5% v:w) and the evaluation of different reaction times (30, 60, and 120 min). The pulp without enzyme application was used as a control. The assays were performed under the agitation of 100 rpm and incubation temperature of 40°C; the initial pH of the pulp was adjusted with 100 mmol/L acetate buffer (pH 5). The samples were analyzed for their total phenolic compounds (TPC) (expressed as mg of gallic acid equivalent per g sample - GAE/g) and antioxidant potential by ABTS, DPPH, and FRAP methods (expressed as μmol of Trolox equivalents per g sample - μmol TE/g). The content of TPC ranged from 2.30 to 4.33 mg GAE/g. The antioxidant activity values measured by ABTS method ranged from 27.19 to 46.66 μmol TE/g, while those obtained for DPPH and FRAP methods ranged from 31.11 to 65.97 μmol TE/g and from 21.09 to 32.48 μmol TE/g, respectively. In general, the enzyme treatment increased the TPC content, reaching a maximum value of 4.33 mg GAE/g when the seriguela pulp was treated for 120 min with 0.5% of the enzyme; compared to the control, this enzymatic treatment represented an increase of 88% in TPC. For the ABTS method, an increase of 71% in antioxidant capacity was observed when the seriguela pulp was treated with 0.25% enzyme for 120 min, while for the DPPH, the best result was achieved after 60 min of reaction with 0.25% enzyme, reaching a 112% increase in antioxidant activity compared to the control. For the FRAP method, a 54% increase was observed when the pulp was treated with 0.5% enzyme for 120 min. The enzymes, in this case, a mixture of cellulases, when applied in the extraction of

phenolic compounds act by hydrolyzing the plant cell wall components, which facilitates the release of insoluble components that are complexed with macronutrients, increasing the antioxidant capacity of the food matrix. Given the results obtained, the application of enzymatic treatment can be considered an excellent strategy to improve the extraction of phenolic compounds from seriguela pulp, improving its antioxidant potential.

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