EVALUATION OF ANTIOXIDANT CAPACITY AND ALPHA-AMYLASE AND GLYCATION INHIBITORY ACTIVITY OF \textit{ANNONA CRASSIFLORA} PEEL EXTRACTS FOR TREATMENT OF DIABETES

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Introduction and objectives: Natural antioxidants have been associated with reduction of postprandial hyperglycemia by blocking enzymes involved in the carbohydrates digestion. Furthermore, the reduction of advanced glycation end-products represents a strategy to prevent the complications of diabetes. Thus, the aim of this study was to evaluate the antioxidant capacity and the salivary alpha-amylase and glycation inhibitory activity of aqueous and ethanolic extracts of \textit{Annona crassiflora} (araticum) peel. Materials and methods: Antioxidant activity was determined using the free radical 2,2-diphenyl-1-picrylhydrazyl method. Human saliva subjected to ion-exchange chromatography yielded an enriched fraction of salivary alpha-amylase (HSAf), whose inhibition was probed with a colorimetric assay based on the kinetic measurements of 2-chloro-p-nitrophenol linked to a maltotriose. Antiglycation activity was determined by a fluorometric method using bovine serum albumin incubated with fructose. All assays were performed in duplicate, with various concentrations of the aqueous and ethanolic extracts of \textit{Annona crassiflora} peel for determining IC50 values (mean and standard deviation). Results and conclusions: The aqueous and ethanolic extracts were able to inhibit oxidation over 80% from concentration of 55 \(\mu\text{g/mL}\); their IC50 values were similar to that of ascorbic acid, 22.64 \(\pm\) 3.13 and 16.7 \(\pm\) 1.63 \(\mu\text{g/mL}\), respectively. The araticum extracts had a higher HSAf inhibitory activity from concentration of 1000 \(\mu\text{g/mL}\), with IC50 of 331.8 \(\pm\) 60.27 and 1002 \(\pm\) 229.5 \(\mu\text{g/mL}\) for aqueous and ethanolic extracts, respectively. From 100 \(\mu\text{g/mL}\), both extracts reached 100% of anti-glycation activity, although the ethanolic extract showed lower IC50 (21.19 \(\mu\text{g/mL}\)) than the aqueous extract (37.7 \(\mu\text{g/mL}\)). This study suggest that a dietary supplementation with natural inhibitors of carbohydrates hydrolysis with antioxidant and anti-glycation activities may be a complement to traditional therapies targeting diabetic complications. Thus, the evaluation of natural products with beneficial biological properties can help accelerate our knowledge of biodiversity and support sustainable development strategies.

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