

CHARACTERIZATION AND *IN VITRO* STARCH DIGESTIBILITY OF GREEN BANANA PULP AND PEEL FLOURS

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Summary: The use of green banana pulp (GBPF) and peel (GBPeF) flours in food formulations may be a viable alternative to minimize post-harvest losses and improve the nutritional value of foods. Thus, the objective of this study was to characterize and evaluate the *in vitro* starch digestibility of GBPF and GBPeF. Green banana (*Musa paradisiaca*, AAB group) bunches, cultivar “Prata”, were harvested at maturity stage 1 (completely green), from May to July, 2021, in Viçosa, Minas Gerais, Brazil. Green banana pulps were immersed in drinking water, while the peels were immersed in a 0.5% (w/v) citric acid solution for 20 min. Pulps and peels were sliced and dried at 55°C, airspeed of 1.5 m.s⁻¹, for 9 h. Then, the dried material was ground in a knife mill with a 1.0 mm sieve, in order to obtain GBPF and GBPeF. GBPF and GBPeF were characterized (e.g. proximate composition, fatty acid profile, concentration of total phenolics, condensed tannins, etc) and their *in vitro* starch digestibility (rapidly digestible starch, slowly digestible starch and resistant starch contents) was evaluated. The average yields of GBPF and GBPeF were 290.70 and 78.80 g/kg of fruit *in natura*. The concentration of lipids, total dietary fiber and ash was higher in GBPeF (7.53, 39.57 and 8.41%, respectively) than in GBPF (0.61, 8.63 and 2.23%, respectively). In addition, some minerals such as potassium, calcium, iron and zinc, total phenolics and condensed tannins were higher in GBPeF. These results show that GBPeF has compounds of great interest to the food industry. Monoacylglycerols and polar lipids showed the highest percentage among the lipid fractions of GBPeF oil, while the GBPF oil presented, as

main lipids, triacylglycerols and monoacylglycerols. Furthermore, oleic acid was the main monounsaturated fatty acid identified in the flours, while linolenic acid and eicosapentaenoic acid (EPA) were mainly found in the GBPeF. Those fatty acids are well known due to their health benefits. Total starch (TS) and resistant starch (RS) contents of the flours were: GBPF (TS=69.5% and RS=44.1%) and GBPeF (TS=24% and RS= 17.9%). Both flours had low contents (lower than 3%) of slowly and rapidly digestible starch. Therefore, this study confirms the potential of green banana pulp and peel flours, as relevant sources of resistant starch and bioactive compounds for the development of healthy foods.

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