### ABSTRACT

The effect of two enzymatic treatments (increasing the branch density of starch and shortening of AP and amylose chains) on the fraction of slowly digestible starch (SDS) and resistant starch (RS) of plantain (Musa paradisiaca L.) and mango (Mangifera indica L.) starches was investigated. The enzymatic modifications were carried out using β-amylase (β-AMY) and β-amylase-transglucosidase (β-AMY-TGs), in gelatinized starches. Plantain starch showed an increase from 10.9 to 18.5% of SDS, when it was modified by β-AMY-TGs, while the treatment with β-AMY alone showed reduction from 10.9 to 7.1% in SDS. RS content increased with both treatments. On the other hand, mango starch showed an increase in SDS from 6.3 to 22.3% using β-AMY treatment and from 6.3 to 11.7% using β-AMY-TGs treatment. The latter treatment also increased RS content. The enzyme modified starches showed a reduction in the values of molar mass and gyration radius compared with the native starch. The content of short chains of AP, particularly in the DP range 5–12, increased, the percentage of crystallinity decreased in treated starches, and 1H NMR spectra showed a significant increase of α-(1 → 6) linkages in the starches modified with β-AMY-TGs. These characteristics were related to an increase in the slow and resistant digestion properties of plantain and mango starches.

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