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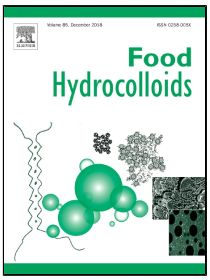

Fractionation pH of bambara groundnut (*Vigna subterranea*) protein impacts degree of complexation with gum arabic

Nyasha M. Busu, Eric O. Amonsou

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Fractionation pH of bambara groundnut (*Vigna subterranea*) protein impacts degree of complexation with gum arabic

Nyasha M. BUSU, Eric O. AMONSOU

Department of Biotechnology and Food Technology,

Durban University of Technology, PO BOX 1344, Durban 4000, South Africa

ABSTRACT

Bambara groundnut is a protein-rich legume of African origin. This study investigated the influence of fractionation pH on degree of complexation of bambara protein isolate (BPI) with gum arabic (GA). BPI extracted at pH 2, pH 7, pH 9 and by the traditional salt solubilisation method were complexed with GA. BPI-GA complexes appeared as spherical particles (average size: 100-200 nm) that were aggregated. Optimal pHs of biopolymer interactions decreased (pH_{opt}: 4.8 to 2.9) as protein extraction pH became more acidic. pH 2 fraction had the lowest coacervates yield (41%). ζ-potential profiles of protein fractions displayed similar pH dependent patterns, but with different pHs of net neutrality. The pH 2 fraction showed a high molecular weight protein (100 kDa), which was absent in other fractions. It also contained the highest content of basic amino acids. Protein extraction pH could be manipulated to produce better acid- stable structures on complexation with polysaccharides.

Keywords:

Bambara, gum Arabic, complexation, protein