
Abstract No. 9

Paper Title **Improvement in Cooking Characteristics of Hard-to-Cook Cowpeas by Pre-Conditioning and Micronisation**

Main Author **Salvador Brasilion Mr**

Presenter

Salvador Brasilion Mr

University of Pretoria Department of Food Science Pretoria SOUTH AFRICA s24540146@tuks.co.za

Co-Authors

ABSTRACT

Cowpeas are widely consumed in developing countries. Due to their nutritional profile, they have the potential to alleviate protein-energy malnutrition. However, the consumption of cowpeas is impaired by the hard-to-cook (HTC) defect. This develops when cowpeas are stored at high temperature and humidity conditions. HTC cowpeas require extended time to cook and have decreased nutritional availability. The effects of pre-conditioning cowpeas in solutions with monovalent (Na⁺) cations followed by micronisation on cooking and physico-chemical characteristics of both normal and HTC cowpeas were investigated.

Pre-conditioning of normal cowpeas in water is effective in reducing the cooking time (from 89 to 44 min). For HTC cowpeas, a combination of pre-conditioning in a solution with Na⁺ cations and micronisation was required to reduce the cooking time optimally, from more than 270 to 59 min. In both cases, the reduction in cooking time coincided with increased pectin solubility and degree of splitting as well as decreased hardness of cooked cowpeas. Improved solubility of pectins of pre-conditioned cowpeas in monovalent cations is attributed to the solubilisation effect of water as well as the conversion of insoluble pectinates to soluble pectins in the presence of monovalent cations. Micronisation after pre-conditioning further improved pectin solubility by breaking pectin molecules into more soluble fractions, probably via the β -elimination reaction. Although all treatments improved pectin solubility of HTC cowpeas significantly, this was not the case for reduced cooking times. This suggests that factors other than pectin solubility influence the cooking time and characteristics of HTC cowpeas.