

**B-72: Effect of sodium and calcium chloride in modifying the texture (firmness) of processed cowpea (*Vigna unguiculata*)**

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Texture (firmness) is an important quality characteristic of canned beans, which is affected by cooking. This study investigates the use of sodium and calcium chloride solutions to modify the firmness of cowpea beans (var. Bombay) during processing. The firmness was measured using an Instron

Texture Meter and Na and Ca contents were determined by chemical methods.

The combination effects of the 2 salts were studied by soaking the seeds for 48 h in 2% NaCl and varying CaCl<sub>2</sub> concentrations (0, 200, 400, 600, 800, 1000 mM), after blanching (100°C, 15 min.). The Texture Profile Analysis (TPA) curve showed values of 37, 38, 42, 52, 63 and 82 Newtons, measured at a velocity of 5 mm min<sup>-1</sup> in response to the Ca concentrations 29, 259, 440, 646, 862, 1,100 mg/100 g respectively, in the beans. However, the Na concentrations in the beans decreased from 425 to 260 mg/100 g. Parallel studies carried out on the sensory properties of the beans revealed that 300 mM CaCl<sub>2</sub> together with 2% NaCl was the most suitable to retain the bean firmness. The treatment gave no bitter taste arising from the addition of CaCl<sub>2</sub>.

Studies on the effect of autoclaving (15 psi, 15 min) on the texture of the soaked and blanched beans in 2% NaCl with and without 300 mM CaCl<sub>2</sub> showed that the firmness of the product was maintained at 3 N, after 2 weeks of storage time, when CaCl<sub>2</sub> was used.

The study revealed that the addition of CaCl<sub>2</sub> to NaCl solution during soaking was required to maintain the firmness of beans in bottled or canned products. This phenomenon can be explained as the result of the strengthening of the interaction between pectin chains with other middle lamella materials due to reaction with Ca<sup>++</sup>.