



A comparative study of the nutritional profile of three Pigeon pea (*Cajanus cajan*) cultivars to enhance food security in sub-Saharan Africa

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Abstract

The pigeon pea (*Cajanus cajan*) is an important but underutilised legume in Côte d'Ivoire. This study aims to establish the nutritional profile of three pigeon pea cultivars grown in Côte d'Ivoire. Several analyses were carried out on three pigeon pea cultivars distinguished by their colour (white, brown and purple). These included the determination of pH and the content of reducing sugars and fibre. In addition, the profiles of vitamins, minerals and essential amino acids were determined. Antinutritional compounds were also identified. The results showed that the pH of the three cultivars is practically neutral (6.9–6.8) and the reducing sugar content ranges from 1.5 to 2.62 mg/100 g. As for fibre content, it varies from 18.5 to 22.42 mg/100 g, with a high content in the purple cultivar. The results also showed that the cowpea cultivars contain several vitamins, notably vitamins A, D, C, K1 and the B vitamins. The brown-coloured cultivar has a high vitamin content compared to the others (Vitamin A: 41.13 µg/100 g; vitamin B1: 61.27 µg; vitamin B5: 291.71 µg). Furthermore, the analyses revealed the presence of minerals such as phosphorus, potassium, calcium, iron, magnesium and sodium. The results also showed that the cowpea cultivars contain all nine essential amino acids in varying proportions. The phytate content of the three cultivars ranges from 16.65 mg (brown cultivar) to 20.08 mg (purple cultivar), whilst the oxalate content ranges from 12.02 (purple cultivar) to 15.03 mg (white cultivar). Although the cultivars studied contain antinutritional compounds, these can be significantly reduced by various techniques, including cooking, soaking and germination. In summary, all three cultivars analysed offer enormous potential, particularly the brown variety. This legume can be incorporated into local dietary habits to improve the nutritional status of vulnerable communities.

Keywords: Pigeon pea, cultivar, nutritional compounds, food security

