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The contribution of root and tuber crops to the nutritional requirements of the developing countries of the tropics – A review

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Abstract

Root and Tuber Crops comprise cassava, sweet potatoes, yams and aroids. They are grown in many tropical regions of the world. In Africa, Nigeria is the largest producer of cassava followed by Thailand in Asia and Brazil in America. These crops which are widely consumed in many developing countries are rich in carbohydrates but are generally poor in proteins and lipids. Cassava and yams are rich in fiber and constitute a major source of dietary fiber in West African sub-region since these crops constitute the main staple foods of the area. Yam and cassava are good sources of vitamin C but poor in other vitamins including vitamin A and B-group vitamins which occur in reasonable amounts in sweet potato and cocoyam.

However, the use of root and tuber crops as food carries with it certain risks attributable to the presence of toxicants and anti-nutrients in them. Cassava contains cyanogens principally linamarin (0.015-1.00gHCN/kg) which may result in cyanide poisoning; sweet potatoes contain trypsin inhibitors which affect the availability of proteins from this source. Alkaloids and tannins are present in some species of yams. Alkaloids are toxic while tannins may reduce the availability of proteins from yams. However, alkaloids are water soluble and are effectively removed by soaking in water. Oxalate accumulates in root and tubers as soluble, insoluble or a combination of both. Soluble oxalate is toxic because it inhibits calcium absorption. However, the level of oxalate in these crops (0.5-0.8g/100g) is too low to pose a threat to consumers. Phytates are also present in root and tuber crops and they reduce mineral element availability from foods.

In spite of the present of toxic and anti-nutritional substances, root and tuber crops contribute significantly to the nutritional needs of the developing countries and will remain the dominant source of affordable energy in these countries in the foreseeable future.