

## Yam: Is It a Functional Food?

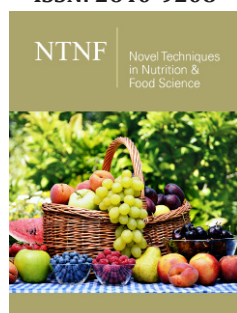
**Monte Guedes CKR\***

Department of Nutrição, Brazil

### Opinion

The yam (*Dioscorea sp*) belongs to the Discotic family and is a plant that has an herbaceous and scandal stem being characterized by forming tubers. The most broadcast are *D rotundata*, *D alata*, *D trifida*, *D esculenta* and *D cayennensis* [1-3]. Its culture is quite common in African countries, especially in west Africa, but also in Brazil, mainly in Southeast and Northeast Regions [4-6]. The tuber is very well accepted in culinary, being used cooked itself or in preparations, but it's use is quite explored in other areas, such as the use for medicinal purposes, with promises to improve the systemic functioning of the organism and to be beneficial in the treatment of some diseases [7]. Because of the association the tuber has been studied for the purpose of maintenance and/or recovery health as well as their functional properties. The yam has important food characteristics. The analysis of its composition evidences that it's rich in carbohydrates, presenting a good energetic value, excellent fiber content, low glycemic index ( $37\pm 8$ ) and glycemic load (13), being still a good source of vitamins and minerals (Table 1); [8-13]. Recent studies point to the beneficial effect and reinforce a diversity of properties related to tuber consumption, or its isolated bioactive compounds. The main functions attributed to the yam are immunomodulatory, antioxidant and anti-inflammatory action, modulation in lipid and glucose uptake and metabolism and performance as protective agent for the treatment and prevention of menopause, cancer and hypertension.

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\*1Corresponding author: Monte Guedes CKR, Department of Nutrição, Brazil

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**Table 1:** Centesimal composition of yam (*Dioscorea sp*).

Species	Author	Moisture (%)	Energy (Kcal/KJ)	Protein (g)	Lipid (g)	Carbohydrate (g)	Fiber (g)	Ash (g)
<i>Dioscorea sp</i>	10	65.62	137.98/ 576.76	3.06	0.86	29.5	-	0,96
<i>D alata L</i>	11	73.7	96.00/ 400.00	2.3	NA	23	7.3	0.9
<i>D alata</i>	12	76.8	105.56b/ 441.24	1.77	0.08	24.44	0.75	0.86
<i>D Cayennensis</i>	13	81.47	73.33/ 306.52	0.77	0.17	17.18	2.24	0.42

<sup>a</sup>Converted to wet basis.

<sup>b</sup>Calculated based on protein, lipid and carbohydrate values.

NA: Not applicable.

There are several components involved in the realization of these functions, such as Dioscurin, the major tuber storage protein of yam and one of the most studied one and well related to antioxidant effect associated to improve the immunologic system [14,15]. The antioxidant effect is also pointed to the flavonoids present in the tuber; evidences show that it is involved in modulation of lipid peroxidation [16].

Other studies cited the discerning, related specially to immunomodulatory effect, being tested with excellent results as anti-viral [17]. The modulation of lipid and glucose metabolism is commonly associated to allantois or the use of extract or the yam itself, presented an ant obesogenic effect too [18,19]. The protective effect against cancer, especially the breast and colon are further studied with the use of yam extract or a culinary preparation with yam

[20,21]. The hypertension is also prevented in use of in nature yam or Dioscuri isolated, by inhibitory effect on angiotensin-converting enzyme (ACE) activity [22,23]. The yam is classically used in natural hormone replacement in the fight against menopause. Pieces of evidence pointed that estrogenic action apparently is associated to the consumption of the whole food and not of specific compounds [24]. Taking in account that functional foods are foods that have a potentially positive effect on health beyond basic nutrition and that the yam presents a diversity of factors that fit it as such. I'm secure, based in whole of these evidences pointed, that the yam as a functional food. In addition to the basic nutritional characteristics, the tuber exerts a positive effect on health and disease prevention.

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