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Poster · January 2016

DOI: 10.13140/RG.2.2.12644.63361

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Comparative Study of Proximate Composition of Palmyrah *Pinattu* and Flour (*Odiyal*, *Boiled odiyal*)



S. Srishankar¹., M. Subajini²., W.A.J.P. Wijesinghe¹, S.M.I.P.G. Bandara, S. SriVijeindran²

¹ *Uva Wellassa University, Badulla, Sri Lanka*

²*Palmyrah Research Institute, Jaffna, Sri Lanka*

ABSTRACT

Palmyrah (*Borassus flabellifer*) palms can be believed as a gift of nature as they contribute wide range of vital products for human diet and existence. Among palmyrah products fruit and flour are highly utilized by local population. Fruits are mostly used as fresh fruit, because of its perishable nature it is traditionally preserved as dried fruit pulp leather called as *pinattu*. Palm produces two types of flour such as *odiyal* (Dried tuber) and *plukodiyal* (boiled and dried tuber) flour. In this study the proximate composition of palmyrah *pinattu* and flour were evaluated. Samples were collected from the three different branches of Palmyrah Development Board and used for the analysis. There were no significant different between moisture content of the boiled *odiyal* flour [11.66±(0.001)] and *odiyal* flour [10.66±0.001] while *pinattu* showed [16.6±(0.008)]%. Protein content of boiled *odiyal* flour [6.51±0.062] and *odiyal* flour [6.7813±0.06] were significantly higher when compared with *pinattu* [2.23±0.062] g/100g. As well fat content of *odiyal* flour was 0.43±0.013 g/100g and significantly higher than boiled *odiyal* flour and *pinattu*. Significantly higher amount of ash was observed in *pinattu* [0.04±0.001] when compared with flour. Boiled *odiyal* flour [7.13±0.18] contained significantly higher crude fiber content than *odiyal* flour [4.49±0.15] and *pinattu* [5.06±0.01] g/100g. Carbohydrate content was significantly higher for *odiyal* flour [77.59±0.5] when compared with *pinattu* [75.91±0.61] and boiled *odiyal* flour [74.37±0.65 g/100g]. This study was suggested that proximate composition of *pinattu* and flour were varies and which were good source of fiber and protein.

Key words: boiled *odiyal* flour, nutritional, *odiyal* flour and *pinattu*,

INTRODUCTION

Borassus flabellifer L., belongs to family Arecaceae, commonly known as Palmyra palm is a native of tropical Africa (Nesbitt, 2005). This plant has a commercial and medicinal value (Ghosh et al., 2012). The fruit pulp and flour has been used in traditional dishes. The different parts of the plant is used for the various ailments like secondary syphilis, antiperiodic, heart burns, liver and spleen enlargement etc. It has anti-inflammatory effects (Kapoor, 2000).

The availability of good data provides a strong foundation for the more important analysis. So proximate nutritional composition of *pinattu*, boiled *odiyal* flour and *odiyal* flour analysis information facilitate a better understanding of palmyrah products. Measurement of nutritional status is one of the key indicators for monitoring the overall welfare of a population and measuring the impact of change in factors that affect the welfare of a population. Nowadays the focus on nutrition is based on a new definition of health as "prevention of disease" in which nutrition plays a key role so the nutritional analysis was most important for the population due to this knowledge of proximate composition palmyrah product is essential for its maximum utilization. Objective of the study was proximate analysis of palmyrah fruit pulp leather, raw *odiyal* flour and boiled *odiyal* flour.

METHODS AND MATERIALS

Sampling

Palmyrah samples were obtained from the three different branches of PDB (Palmyrah Development Board) in the period of April to May 2015 then pool together and sample was weighted in random manner.

Proximate composition analysis

The moisture content of the sample were determined using the air oven drying method by using 5g weight at 105°C until a constant weight was obtained. Then moisture content was determined (AOAC, 1994).

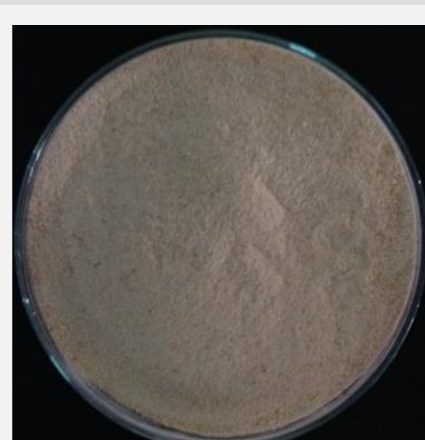
Ash content was determined by incineration of the dried sample obtained from moisture determination in a muffle furnace at 550°C for 5 h.



Pinattu



Boiled odiyal flour



Odiyal flour

Crude protein content was calculated by converting the nitrogen content, determined by Kjeldahl's method (6.25xN) (AOAC, 1994).

The fat extractions were performed by modification of the method of Bligh and Dyer as described by AOAC (1994) with petroleum ether (Boling point 40-60°C, 70mL) in solvent extractor. Residual was kept for crude fiber determination.

Crude fiber was determined by Weende method as described in U.S AOAC (1995)

Statistical analysis

The results obtained from products with three replicate were subjected to analysis of variance by complete randomized design (CRD). The significant difference among the extracts was tested in Least Significant Difference (LSD) at 5 % level of significance using SAS software.

RESULT AND DISCUSSION

Proximate parameters (protein, carbohydrate, lipids ash and moisture) are basic components of metabolic activities that have to do with supply of energy that is used to drive the major physiological processes (Walker et al., 2001). *Pinattu*, boiled *odiyal* flour and *odiyal* flour were showed significant different (p<0.05) for all nutritional parameters except moisture content. *Pinattu* showed highest moisture content than flour while there were no significant different between *odiyal* and boiled *odiyal* flours. This low moisture content was desirable because if the moisture content of the flour is more than 14%, there is danger of bacterial action and mould growth and develops hydrolytic rancidity.

Odiyal flour has highest protein, fat and carbohydrate content when compared with boiled *odiyal* flour because during the processing of boiled *odiyal* flour water soluble compound was washed out. Whereas ash content of boiled *odiyal* flour was significantly higher than *odiyal* flour. This suggests that the boiled flour could be a good source of minerals. The proteins are polymer and amino acids and their relative proportion represents its quality that is dependent on the genetic makeup of palm and along with some environmental factors

Crude fiber content of boiled *odiyal* flour was significantly higher than *odiyal* flour. Which of *pinattu*, boiled *odiyal* flour and *odiyal* flour were 5.0612(±0.01), 7.1338(±0.18) and 4.4965(±0.15) respectively.

Results of the proximate composition tabulated in Table 4.1. Sahni *et al.*, 2014 also reported that the nutritional analysis of the palmyrah dried roots has shown 8.54% protein content, 23.53% carbohydrates, 7.29% crude fiber and negligible fat content.

Table 4.1: Proximate composition of *pinattu*, boiled *odiyal* and *odiyal* flour (g/100g)

sample	Pinattu	Boiled odiyal flour	Odiyal flour
Moisture	16.667(±0.008) ^a	11.6667(±0.001) ^b	10.667(±0.001) ^b
Protein	2.231(±0.062) ^c	6.5188(±0.062) ^b	6.781(±0.062) ^a
Fat	0.081(±0.001) ^c	0.2840(±0.008) ^b	0.434(±0.013) ^a
Ash	0.043(±0.001) ^a	0.0213(±0.000) ^c	0.020(±0.000) ^b
Crude Fiber	5.0612(±0.01) ^b	7.1338(±0.18) ^a	4.496(±0.15) ^c
Carbohydrate	75.9171(±0.61) ^b	74.3765(±0.65) ^c	77.599(±0.52) ^a

Each value in the table is represented as mean ± SD (n = 3).

Values in the same rows followed by a different letter (a-c) are significantly different (p< 0.05).

CONCLUSIONS

This present work elucidated that palmyrah *pinattu* and flour contained great potential for healthy food preparations. These products have appropriate amount of protein content as well as those were very good source of fiber therefore which could be used for various food applications.

RECOMMENDATION

It is hereby recommended, based on the findings of this research work that increased efforts would be made to encourage the consumption of palmyrah based food products. And further studies need to evaluate the effect of soil type on proximate composition of palmyrah products.

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CONTACT

Srikantharasa Srishankar
Uva wellassa university
Email: srishankar23@gmail.com
Phone: 0773495694