



STANDARDIZATION OF DATES SEEDS POWDER INCORPORATED FOOD PRODUCTS

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ABSTRACT

Date palm (Phoenix dactylifera L, family – Arecaceae) has been considered as an important nutritional and medicinal plant due to its health promoting properties. It is grown all parts of India. Its seeds are rich source of dietary fiber, protein, antioxidant, iron and other essential nutrients. The aim of the present study was to standardize various food products Nutrient Ball and Murukku by incorporating roasted dates seed powder at the level of 5 and 10% respectively. These food products were evaluated by panel of judges using composite scoring test. The sensory attributes like color, taste, texture, absence of defects and total of 5% dates seed powder incorporated food products secured highest score than 10% dates seed powder incorporated food products.

Key Words: Dates seed, Anaemia, Antioxidants.

INTRODUCTION

The Dates seed weight ranges from 0.5 g to 4g, the length from 1.2 to 3.6 cm, and the width from 0.6 to 1.3 cm. The seed is usually oblong, ventrally grooved, with small embryo, and with a hard endosperm made of a cellulose deposit on the inside of the cell wall. (Chang Young Lee *et al.*, 2011).

Dates seed constitute 6-15% of the total weight of the ripe date depending on variety and grade quality. (Carine Platat, *et al.*, 2019)

Date palm (*Phoenix dactylifera* L.) is considered as the oldest fruit tree in the world. It has been cultivated in North Africa and the Middle East for millennia, although the exact origin of date palm has not been verified. Either the Indian date palm (*P. Sylvestris*) or the African date palm (*P. Reclinata*) may have been the progenitor of *Phoenix dactylifera* L. Dates play an important role in the social life of the people who live in the regions both in their diet and medicinally for treating e.g. Obesity. (Akasha, 2014).

Date seeds do not have a smell or odorless and has a slightly bitter taste. In general, it has a light and dark brown. Various studies regarding date seeds have been published in order to determine the functional properties of date seeds used for food and non-food items such as thermal properties, treatment and diet, composition of micro and macro nutrients, the composition of phenolic acid, as an ingredient in bread, and protein solubility. (M.Wahini*, 2016).

Date seeds are highly recommended for use in foods and dietary supplements. Because, it is a very good source of dietary fiber. The amount of dietary fiber found in date seeds is about 58% of which 53% is soluble dietary fiber as hemicellulose, cellulose and lignin. The protein is also found in date seeds with a sizeable amount. Albumin, globulin, prolamin and glutelin are soluble proteins which are found in seeds of the current date. The total phenolic content which is found in date seeds is 48.64 mg/100g. Phenolic acids contained in date seeds include gallic acid, protocatechuic acid, p-hydroxy benzoic acid, vanillic acid, caffeic acid, p-coumaric acid, ferulic acid, m-coumaric acid and o-coumaric acid. Based on boundaries, it is indicated that the highest antioxidant content is in that seed, and included phenolic. Date seeds actually have a more complex function as a food source that can improve the health of the body. (M.Wahini*, 2016).

The date seeds contain different chemical compounds such as saturated fatty acids as steric and palmitic acid, unsaturated fatty acids such as linoleic and oleic acid which could inhibit the 5- α reductase enzyme, zinc, cadmium, calcium and potassium. Date seeds contain 3.1 to 7.1% of moisture. The seed powder is also used in some traditional medicines and have been investigated for human potential health benefits. (Sahar Hassan Orabi *et al.*, 2014)

Women play a critical role not only in ensuring the health, nutrition and overall well-being of entire family but have an inter-generational impact and significantly influence the health of the future generation. Unfortunately in India the nutritional status of women is poor due to varied reasons. A review of NFHS-3 and other data reveal negligible improvement in the nutritional status of women in the past decade. Requirements for various nutrients vary with the chronological ageing depending upon the growth spurt in an individual's life. Physiological and psychological stress relating to onset of menstruation, child bearing and menopause poses additional demands for various nutrients in women (Geeta *et al.*, 2010).

Based on clinical and nutritional feature anaemia is classified into Iron deficiency anaemia, Megaloblastic anaemia, Pernicious anaemia, Haemorrhagic anaemia, Haemolytic anaemia, Thalessemia, Sickle cell anaemia, Aplastic anaemia, Normocytic anaemia, Hypochromic anaemia, Macro and Microcytic anaemia (Obasi , 2008).

Common signs & symptoms of anaemia include Pale skin, Leg cramps, Fatigue, Decreased Hb level, Dizziness, Insomnia, Difficulty in concentration, Shortness of breath , headache, Rapid heartbeat, Koilonychia, Atrophy of papillae of the tongue, Brittle nails and hair, Angular stomatitis, Blurred vision, Irregular menstrual periods, Dysphagia, Glossitis, Muscular weakness etc., (Saowaulk *et al.*, 2012).

Anaemia (a without, aemia-blood) is a decrease in the RBC count and Hematocrit values resulting in a lower ability for the blood to carry oxygen to body tissues. (<https://www.ijfans.com/anaemia>).

Poor density and bioavailability of dietary iron from staple foods are the major etiological factors for wide spread prevalence of iron deficiency in India. (<http://gssr.org/index.php/journal> of basic and applied science).

Anaemia is a major killer in India. Statistics reveal that every second Indian women is becoming anaemic. It affects both adults and children of both sexes, although pregnant women and adolescent girls are most susceptible and affected. (WHO, 2004).

Dates seed powder incorporated Nutrient ball and Murukku can be consumed for better results. So, vitamin D, iron and calcium can drastically increase in anaemic women.

In recent years, there has been growing interest in alternative therapies and therapeutic use of natural products, especially those derived from plants and seeds (Schwartzman, 2002).

With the gradual increase in consciousness of the human beings about food and health, it is an open era to interact on various prospective and efficiency of nutrition. Keeping this in view, various food products *viz.*, Nutrient Ball and Murukku were formulated by incorporating Dates seeds powder and other iron rich ingredients to eradicate the global serious major health problem called “Anaemia”.

Keeping all the above points into consideration, the present study was undertaken with the following objectives:

- To standardize the Dates seed powder incorporated food products.
- To evaluate acceptability level of the control and formulated products.

METHODOLOGY

The present study was carried out in the Food Science Laboratory of the Department of Food Science And Processing Management, Subbalakshmi Lakshmiathy College of Science (Autonomous), Madurai. The raw materials were purchased from departmental stores in Madurai.

Preliminary preparation of selected ingredients

The procured raw materials such as Ragi, flax seed, Groundnut, Sesame, Gingelly Oil, Ghee Rice flour, Roasted Urad dal Flour, Roasted Bengal gram flour and Jaggery are cleaned to remove dust, dirt, stones and other foreign materials. Dates seeds were roasted at a temperature of 50 °C for five minutes in order to reduce the pungent smell, then it was ground and it is sieved to obtain fine powder. The prepared powder was used to make various products viz., Nutrient ball and Murukku.

Standardization of Dates seeds powder incorporated food products

Dates seeds have high nutritive value and enormous health benefits. It was made into fine powder and incorporated in different products such as Nutrient Ball and Murukku. Dates seed were incorporated at the level of 5% and 10% in all the formulated products respectively. Standardized procedure was followed for all the formulated recipes by (Philip).

Development of Dates seed powder incorporated Nutrient Ball:

Weighed amount of ragi was cleaned, washed and soaked for 2 hours and Drain the water well, tie it in a cloth for a night for germination ,dry the sprouted ragi and make it into a fine powder, sieve the powdered flour and steam the flour in idli mold cook it for 10 minutes. Then dry roast the flax seed, groundnut, sesame, cashew and make into a powder .then add the powdered mixture to the steamed ragi flour and incorporate 5 & 10 per cent roasted date seed powder and make it into a ball. Control, 5 and 10 per cent dates seed powder incorporated nutrient ball were developed and evaluated for its acceptability.

Development of date seeds powder incorporated Murukku:

Measured quantity of raw rice was procured, cleaned, washed and soaked for 2 hours. Drain the water well, spread it on a cloth for few minutes and make it into a fine powder. Then sieve the powdered flour and use it for further preparation. Add raw rice flour, bengal gram flour, roasted Urad dal flour, sesame seeds, butter and incorporate 5 and 10 per cent roasted dates seed powder and mixed together, as per the proportion of ingredients and make into a soft dough. Extrude the mixture and deep fry it at 180° C for 3 minutes and cooled. Control, 5 and 10 per cent dates seed powder incorporated murukku were developed and evaluated for its acceptability.

ORGANOLEPTIC EVALUATION

Dates seed incorporated food products viz., Nutrient Ball, Murukku were prepared by incorporating Dates seed powder at the level of 5% and 10% respectively. It was evaluated by a panel of judges using composite scoring test.

Figure-1: Preparation of Dates Seed Powder

Collection of Dates seed



Cleaning



Drying



Roasting



Powdering



Dates seed powder



Cleaning



Weighing



Drying



Roasting



Grinding

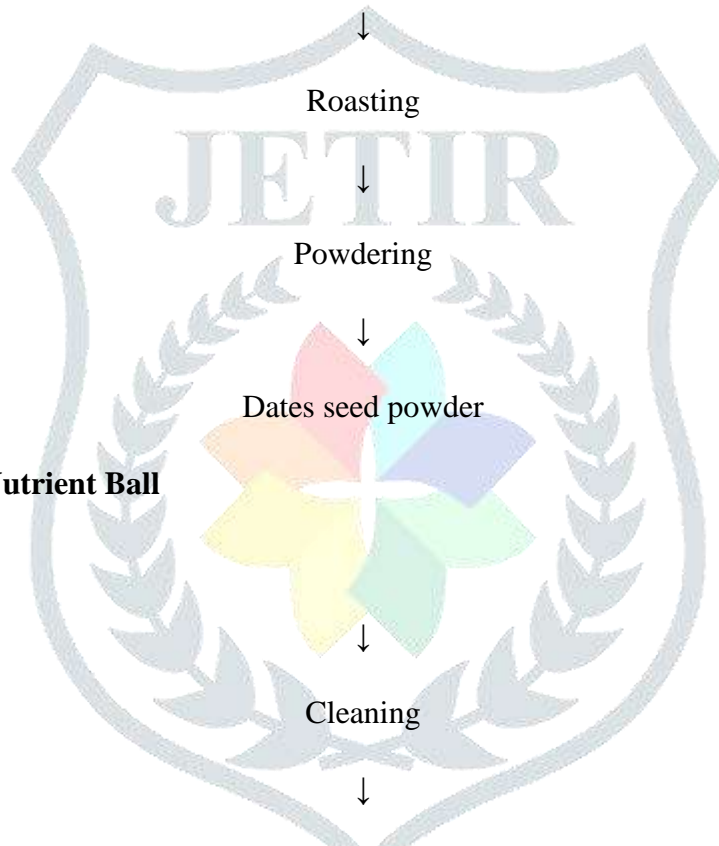


Figure-2: Preparation of Nutrient Ball

Collection of ingredients

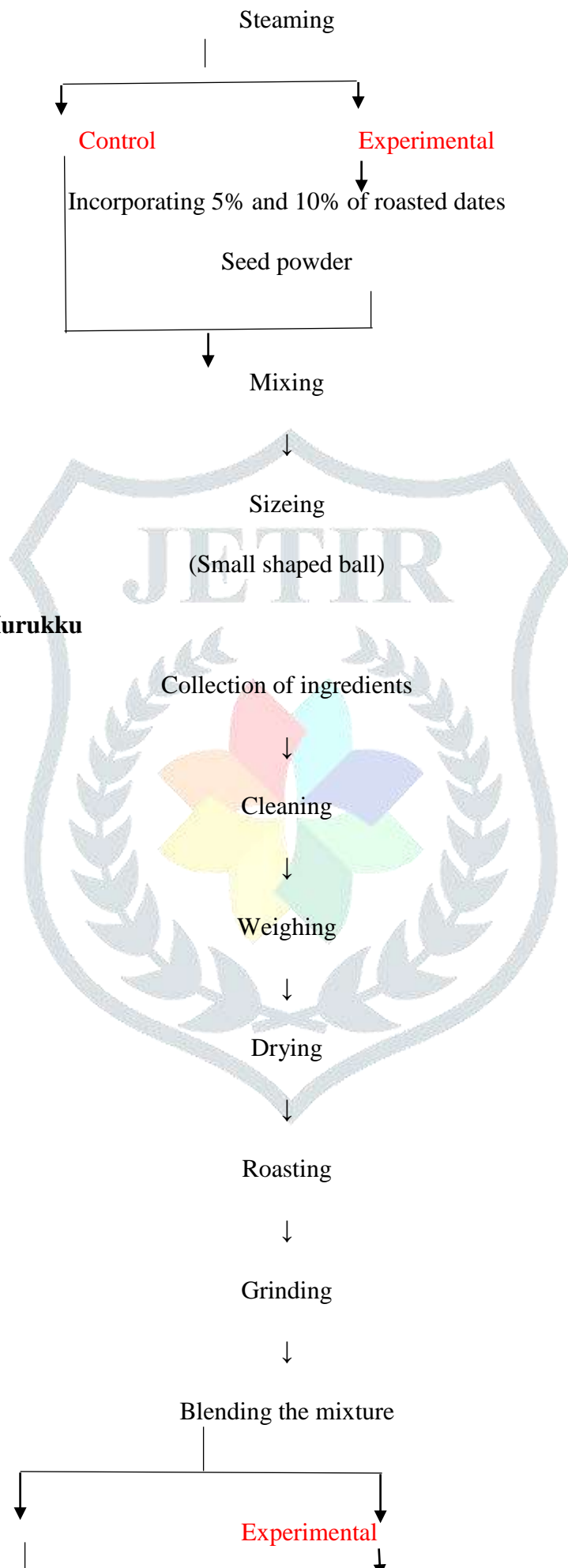
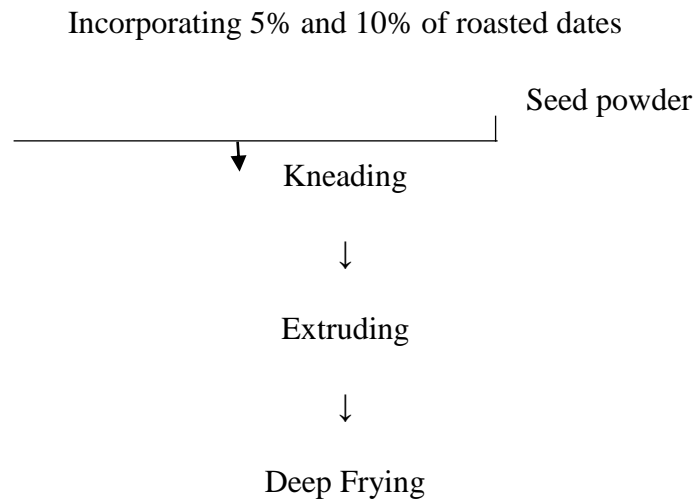


Figure-3: Preparation of Murukku



Acceptability of Control and Dates seed powder incorporated Nutrient Ball.

Nutrient Ball was prepared by incorporating roasted Dates seed powder at the level of 5 and 10% respectively and the acceptability for each sensory attributes is discussed in Table 1.

Table1: Mean scores obtained for the Control and Dates seed powder incorporated Nutrient Ball.

Sensory Attributes	Colour	Texture	Taste	Absence of Defects	Overall Mean Scores
Control	19.4	19.2	19.4	19.2	19.3
DSPINB	19.5	19.5	19.6	19.3	19.5

DSPINB-5% Dates seed powder incorporated Nutrient Ball.

Acceptability of Control and Dates seed powder incorporated Murukku

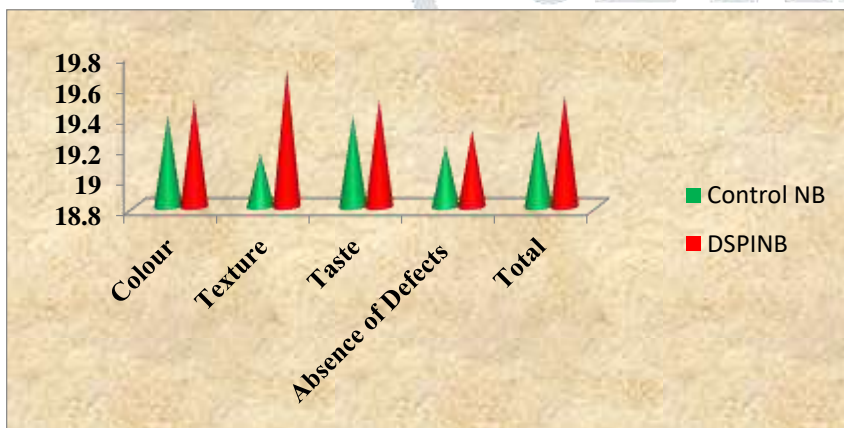
Murukku was prepared by incorporating roasted Dates seed powder at the level of 5 and 10% respectively and the acceptability for each sensory attributes is discussed in Table 2.

Table2: Mean scores obtained for the Control and Dates seed powder incorporated Murukku.

Sensory attributes	Colour	Texture	Taste	Absence of Defects	Overall mean scores
Control	19.5	19.4	19.1	19	19.1
DSPINB1	19.5	19.6	19.4	19.1	19.4

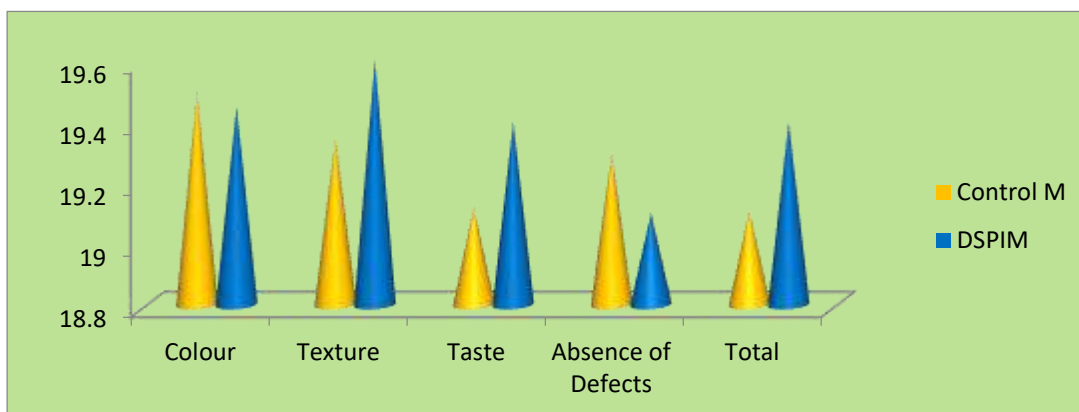
DSPIM-5% Dates seed powder incorporated Murukku.

Figure 4- Control and DSPINB



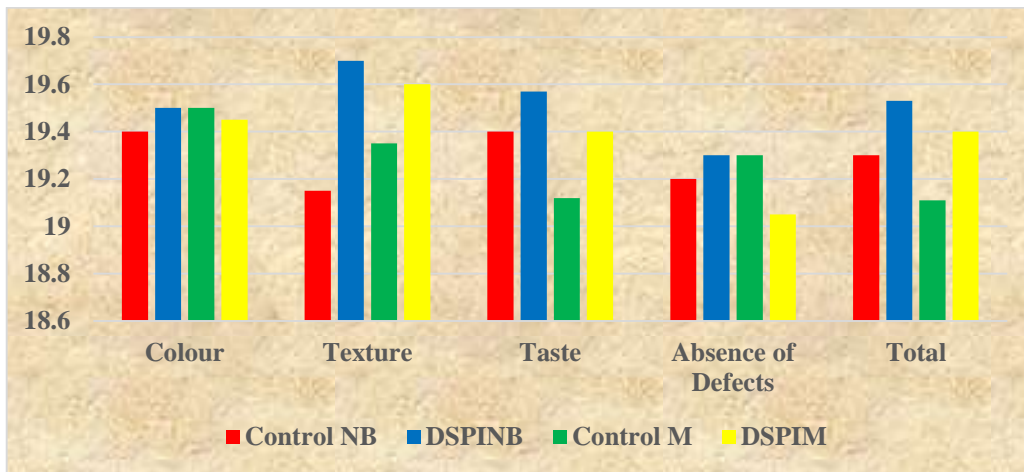
DSPINB- Dates seed powder incorporated Nutrient Ball

Figure 5- Control and DSPIM



DSPIM- Dates seed powder incorporated Murukku

Figure -6: Overall mean scores obtained for control and dates seed powder incorporated food products:



DSPINB - Dates seed powder incorporated nutrient ball

DSPIM -Dates seed powder incorporated Murukku

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