
Utilization of Waste Soya Cake (Okara)

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ABSTRACT:

Maintenance of optimal nutrition and positive health of Population through assumed nutrient intake continues to be a national priority. For a nation to be healthy, strong and productive, the nutritional status of people must be good. Soymilk and tofu production yields large quantities of agro waste (Okara). Okara is high in fiber making it a potential nutritious food ingredients. The shelf life of only a day makes its difficult to work with in large scale operations. in the new millennium we are witnessing the upward trend in nutritional and health awareness which has increased the consumer demand for functional foods. Keeping this in view industry is forced to bring nutritionally products in the market with acceptable sensory Characteristics. The present investigation was made with an attempt to develop a cake by using wheat and soya waste Okara. Control soya waste cake was incorporated with T₀ without okara (100% wheat flour), T₁ Was incorporated with 25% Okara flour, T₂ was incorporated with 50% Okara flour. T₃ was incorporated with 75% Okara flour. The soya waste cake samples of different treatments and control Chemical analysis fat percentage, protein, moisture, ash, and carbohydrate was done for estimating its Nutritional Content and safety and organoleptic characteristics like (flavour and taste, body and texture, colour and appearance) by trained panellist using 9 point hedonic scale. Thus as far as product acceptability, it is judged by Organoleptic evaluation. These studies demonstrate that okara can be used to increase the value of the agro waste.

KEY WORDS:- Nutritional, Health, Okara , Organoleptic characteristics, Wheat and its composition

Hoseney et al., (1988) Wheat is grown throughout the world and is adaptable to the wide range of environmental conditions. Wheat based foods are major source of nutrients in many regions of the world. Although, wheat is generally used as a source of carbohydrates; but its products are also a substantive source of protein, vitamins, and minerals, when consumed as a major component of a diet. It is used extensively in many parts of the world for the preparation of different types of bread and many other bakery products.

Anjum and Walker, et al., (1991) Wheat (*Triticum aestivum*) is a staple food in many parts of the world. In Pakistan, 80% of the total wheat produced is used for making chapattis, rotis, and naan. These are primary and the cheapest source of protein and calories for the population.

Shewry et al., (2009) The gluten protein fraction which confers the viscoelastic properties that allow dough to be processed into bread, pasta, noodles, and other food products. Wheat also contributes essential amino acids, minerals, and vitamins, and beneficial phytochemicals and dietary fibre components to the human diet, and these are particularly enriched in whole-wheat products.

Kumar et al (2011) whole wheat, which includes bran and wheat germ, therefore, provides protection against diseases such as constipation, ischaemic, heart disease, disease of the colon called diverticulum, appendicitis, obesity and diabetes.

SOY FOODS:

Myers, et al., (1993). In China, where soybean is valued as “vegetable meat”, people call it “da dou”, which means “great bean”. In the United States, the soybean has also been dubbed “the miracle bean”. Worthwhile for this honor, the little round legume is useful and

versatile all over the world for its limitless applications. Currently, people are familiar with soy because it is an efficient and cheap source of high quality protein and seed oil. Soy is utilized industrially for everything from soap to animal feed to environmentally friendly ink.

SOYBEANS: TYPICAL USES AND VARIETIES:

Desmond et al., (1999). Large quantities of okara produced annually pose a significant disposal problem. It contains mostly crude fiber composed of cellulose, hemicellulose, and lignin, about 25% protein, 10–15% oil, but little starch or simple carbohydrates. It is a suitable dietary additive in biscuits and snacks because it reduces calorie intake and increases dietary fiber.

Hill et al., (2006). Soybeans, a legume in the Leguminosae family, subfamily Papilionoideae and genus Glucine, soybeans are grown world-wide for several uses ranging from food sources sauce (soymilk, tofu) to bio fuels the United States is currently the largest soybean producer in the world accounting for about 38% of production in 2007 (IBIS World). In the United States, most of the soybeans are used for production of oils or for animal feeds.

Grizotto et al., (2006). The soymilk production system normally employed by Brazilian companies was developed by Bourne (1970) and is based on hot disintegration of the soybeans and separation of the insoluble fraction. This system produces good quality soymilk and large volumes of residue, also known as okara.

NUTRITIONAL BENEFITS OF SOY FOODS:

Shurtleff et al., (1975). Soy products have been shown to play an important role in health. Soybeans have been prized for their remarkable ability to produce over 35% protein by weight, more than any other unprocessed plant or animal food. Only toasted or steamed whole soybeans are poorly digested. Soybeans contain all of the eight essential amino acids in a configuration readily usable by the human body.

Bressaniet al., (1981). Most commercial soyfoods are easy to digest. Tofu, for example, is more than 92% digestible; soy flour, about 85-90%; and soy protein isolates, about 95%.

The experiment “DEVELOPMENT OF CAKE BY USING SOYA WASTE ” was carried out in the lab of food technology, Warner School of Food and Dairy Technology, Sam Higginbottom Institute of Agriculture, Technology & Science, Deemed to be University, Allahabad.

TREATMENT

T₀ – 100% Wheat Flour

T₁ – 75% Wheat Flour and 25% Okara Flour

T₂ – 50% Wheat Flour and 50% Okara Flour

T₃ – 25% Wheat Flour and 25% Okara Flour

PROCUREMENT OF RAW MATERIAL

Okara – extracted by soya bean was collected from local market Allahabad.

Wheat Flour- under the brand name “Ashirvad”.

Sugar – Sugar was purchased from local market Allahabad.

Milk- under the brand name “Amul” Will be purchased from local market Allahabad.

Egg- local market.

Butter -LOW FAT” was purchased local market.

Baking Powder – “RXE” under the brand name was purchased from local market.

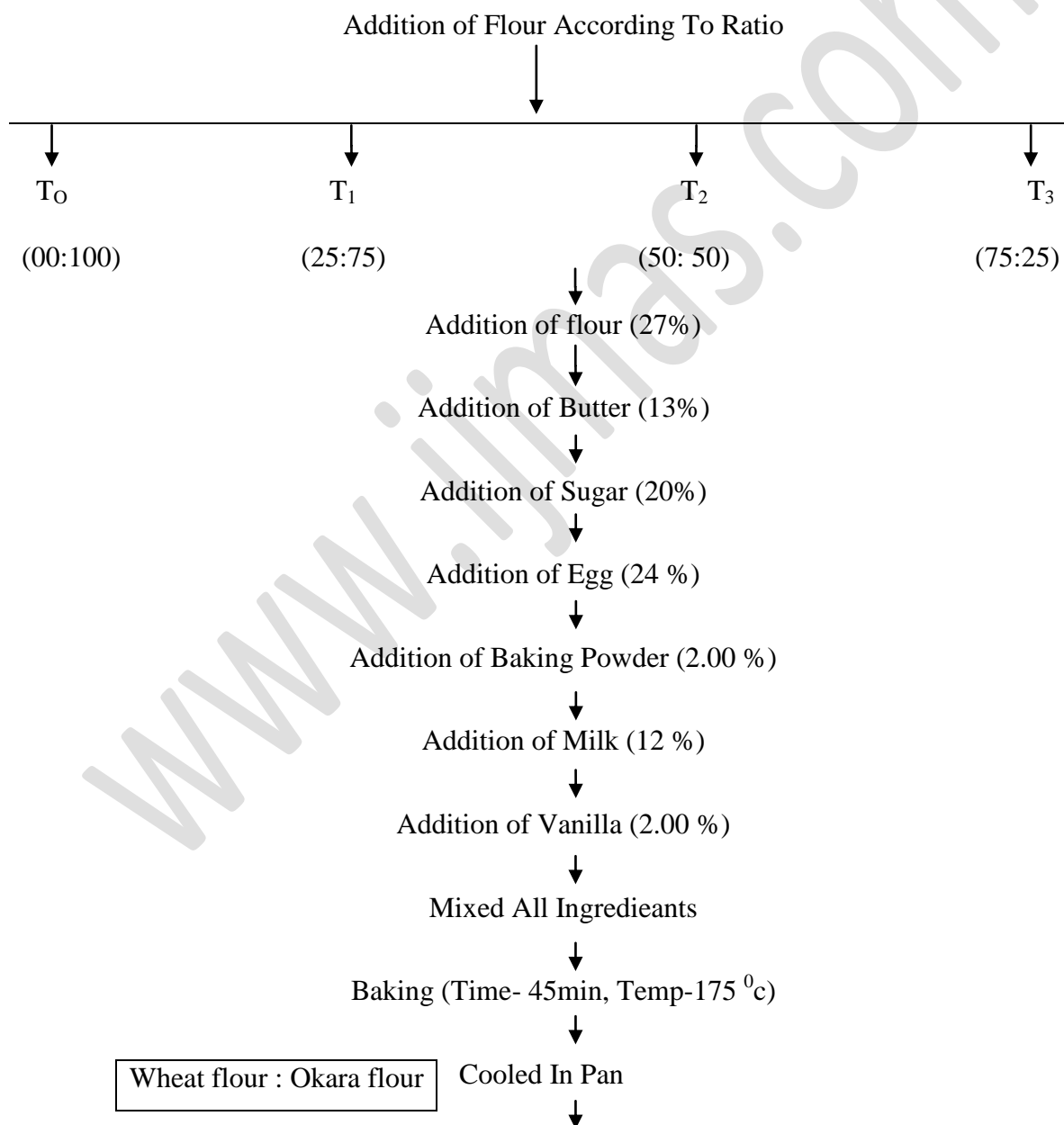
Vanilla Essence – “RXE” brand name was purchased from local market Allahabad.

DEVELOPMENT OF SOYA WASTE CAKE METHOD.

Soya waste cake (sanjeevkapoor, 2010) were formulated via the cake method. All dry ingredients (27 % flour, 2.00 % baking soda,) were mixed together in a bowl, in a separate container; all the wet ingredients (20 % Sugar, 13 % Butter, 24 % Egg, vanilla 2.00%, milk 12%) were mixed together. The wet ingredients were then added to the dry ingredients and

mixed until just combined. All cake were baked in conventional cake pans lined with cake liners sprayed with non-stick cooking spray at 175°C in a conventional oven for 35- 40 min, then cooled for 5 min prior to cooling on a rack.

Treatment And Procedure Adopted For Manufacturing Control And Experimental Okara
Cake



Okara Cake

The following observations were made:

The different between the mean value of $T_0 - T_1$ (0.4) was smaller than C.D. Value 0.82

therefore difference was non- significant.

The different between the mean value of $T_0 - T_2$ (1.8) was greater than C.D. Value 0.82
therefore difference was significant.

The different between the mean value of $T_0 - T_3$ (0.2) was smaller than C.D. Value 0.82
therefore difference was non- significant.

The different between the mean value of $T_1 - T_2$ (1.4) was greater than C.D. Value 0.82
therefore difference was significant.

The different between the mean value of $T_1 - T_3$ (1.6) was greater than C.D. Value 0.82
therefore difference was significant.

The different between the mean value of $T_2 - T_1$ (0.2) was smaller than C.D. Value 0.82
therefore difference was non- significant.

The difference in the score of control and experimental soya waste cake was significant
difference between (T_1, T_2) , (T_0, T_2) ; (T_1, T_3) ; (T_2, T_3) ; but there was non-significant difference
 (T_0, T_1) ; (T_0, T_3) ; (T_0, T_3) .

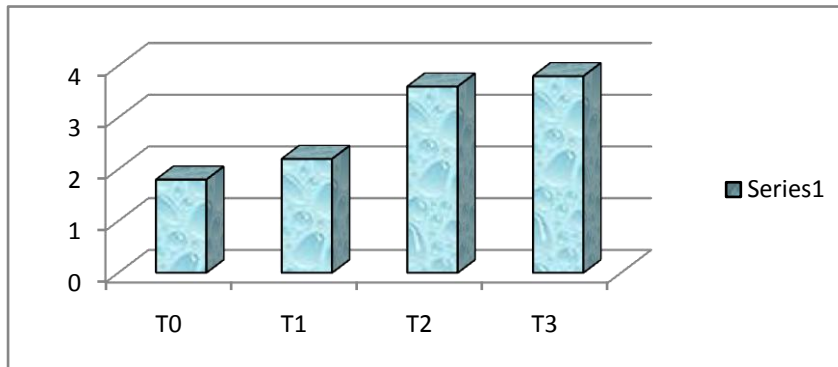
STANDARD PLATE COUNT UNIT(10^3 cfu/gm)

T_0 – 100% Wheat flour

T_1 – 75% Wheat flour and 25% Okara flour

T₂ – 50% Wheat flour and 50% Okara flour

T₃ – 25% Wheat flour and 75% Okara flour



“Standard Plate Count” in different treatments of Okara cake

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