

Quality Evaluation of *DUBLA*, a Traditional Snack Produced from Wheat and Soybean Blends

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Abstract: *Dubla* is a snack that is very common in the northern part of Nigeria which is usually prepared during occasions such as naming, wedding and others. It is usually produced just like Chinchin using wheat flour, butter, milk and eggs from which a stiff dough is made and then deep fried until golden brown and crisp. The use of wheat flour and soybeans flour in the production of *dubla* was studied. The wheat flour was complimented with soybean flour in the ratio of: 100:0%, 90:10%, 80:20%, 70:30%, 60:40% and 50:50%, and were labeled A, B, C, D, E and F respectively of which Sample A served as control. The proximate composition and sensory quality of the *dubla* was evaluated. From the results obtained, the moisture, protein, fat, ash and carbohydrate content ranged from 8.78 to 15.65%, 8.35 to 15.47%, 23.22 to 42.92 %, 0.98 to 1.80 % and 44.26 to 55.87 % respectively. There were significant differences ($p < 0.05$) in sensory attribute analyzed. Sample C and D with 20% and 30% soy-flour substitution had the best color attribute rating 7.80 and 7.85 respectively and sample D with 30% soy-flour substitution had the best overall acceptability

Key words: *Dubla*, soybean flour, wheat flour, proximate composition, sensory evaluation.

1.0 Introduction

Dubla is a traditional snack mostly eaten in the northern part of Nigeria. It is usually produced just like Chinchin using wheat flour, butter, milk and eggs from which a stiff dough is made and then deep fried until golden brown and crisp (Adegunwa *et al.*, 2014). Snacks are usually light quick meals usually eaten between the main meals intended to assuage hunger or to satisfy the consumers craving for its taste (Nnam, 2003; Matz, 1993). Matz (1993) again reported that snack foods are usually consumed primarily for pleasure rather than for social or nutritive purpose and not ordinarily used in a regular meal. They are usually intended to be eaten to temporarily subside hunger, and boost energy, the edge off appetite, and most importantly provide useful nutrient needed for healthy growth, development and living (Karen, 2000). Lately, snacking is becoming prominent in the feeding of children, adolescents and working-class people. Most of the snacks consumed in Nigeria are cereal based especially those prepared commercially are usually wheat based (Madukwe *et al.*, 2013).

The objective of this study is to Produce *Dubla* from wheat flour and soybeans flour, determine the proximate composition sensory properties and physical property of the product.

2.0 Materials and Methods

2.1 Materials

Commercial high quality wheat flour (Golden penny, Nigeria flour mill), soybean seed, and other ingredients such as, butter, eggs, salt, baking powder, sugar, evaporated milk and vegetable oil were obtained from Baga road market, Maiduguri, Borno state Nigeria.

Preparation of soybeans flour.

The soybeans were cleaned to remove dirt and extraneous materials; unsound grain was sorted out by hand picking. It was steam cooked for 30 min, dehulled by lightly crushing with a pestle and mortar. The hulls were separated and the beans oven dried to 12% moisture content. This was milled, packed in polythene bags and were stored for further use (Filli *et al.*, 2010).

Processing of *Dubla*

Composite flour was prepared by complimenting soybeans flour with wheat in the percentage proportion of 100:0, 90:10%, 80:20, 70:30, 60:40, and 50:50 respectively as shown in Table 1. The *Dubla* which is similar to chin chin is produced according the method of Ajani *et al.*, (2012) with slight modification where the dough is made into a flat thin layer and rolled into a circular pattern before frying. The composite flour and baking powder was mixed in a large bowl, butter was then added and was mixed for 15 minutes. Egg, water and milk were also added and thoroughly kneaded to give stiff dough using sheathing board. The kneaded dough was then made into a flat thin layer using local pasta making machine, cut into smaller piece and rolled into required shape. It is then deep fried, until a golden brown color was obtained

Table 1. Formulation of blends (Wheat and soybeans per 100 grams)

Ingredients	Sample A 100:0	Sample B 90:10	Sample C 80:20	Sample D 70:30	Sample E 60:40	Sample F 50:50
Wheat(g)	100	90	80	70	60	50
Soybeans(g)	0	10	20	30	40	50
Salt(g)	0.3	0.3	0.3	0.3	0.3	0.3
Sugar(g)	20	20	20	20	20	20
Butter(g)	10	10	10	10	10	10
Backing powder(g)	0.3	0.3	0.3	0.3	0.3	0.3
Egg(whole)	1	1	1	1	1	1
Milk(ml)	15	15	15	15	15	15
Water(ml)	25	25	25	25	25	25

Determination of proximate composition

The protein, fat, carbohydrates, moisture and ash content were determined using standard methods (AOAC, 2000). Triplicate determination was carried out and the result averaged while the percentage carbohydrate was calculated by difference where all other constituent of food such as moisture, fat, protein, and ash were summed and subtracted from 100

Sensory evaluation

Sensory attribute of the *dubla* were Obtained by using a hedonic scale. This was done using 20 untrained panelists comprising of students of the Department of Food Science and Technology, who were familiar with the product. Each panelist was asked to score each attribute on a 9-point hedonic scale where 1 and 9 represented dislike extremely and like extremely respectively. The attributes that were evaluated include: Color, taste, flavor, texture, crispness and overall acceptability as described by Meilgard *et al.*, (2007).

Statistical Analysis

The data collected were subjected to analysis of variance (ANOVA). Means were separated using Duncan's multiple range test (DNMRT) using the Statistical Package for the Social Sciences (SPSS) version 17.0 (SPSS Inc., Chicago, IL, USA).

3.0 Results and Discussion

Proximate composition

The result of the proximate composition of the *Dubla* is shown in Table 2. The result shows that there were significant differences ($p < 0.05$) in the protein content of *Dubla* which ranged from 8.35% to 15.47%. The moisture content ranged from 8.78% to 15.65% with the highest value observed in sample A (100% w), while sample F (50w:50s) had the lowest value. Generally, there was reduction in moisture content as the soybeans flour increased. The fat content also increased from 23.22% to 42.92% the highest value was recorded in sample F. The high oil content is attributed to the increase in soybean flour. The ash content also increased from 0.98% to 1.80% and it is an indication of mineral content of food. There were significant differences ($p < 0.05$) in carbohydrate content. The carbohydrate content decreased with increase in soy-flour and ranged from 44.26% to 55.87%. Sample A (100% w) had the highest carbohydrate content while sample F (50w:50s) had the lowest.

Table 2. Proximate composition of different formulation of *Dubla*

Sample	Protein	Moisture	Fat	Ash	Carbohydrate
A	8.35± 0.08 ^f	15.65± 0.00 ^a	23.22± 0.00 ^f	0.98± 0.01 ^f	55.87± 0.50 ^a
B	9.32± 0.08 ^e	9.83± 0.16 ^c	23.87± 0.38 ^e	1.02 ±0.36 ^e	52.37± 0.13 ^b
C	10.08± 0.33 ^d	9.99± 0.00 ^b	24.33± 0.00 ^d	1.21 ±0.05 ^d	49.00± 0.00 ^c
D	11.14± 0.07 ^c	8.78± 0.33 ^d	28.48± 0.01 ^c	1.39 ±0.00 ^c	48.31± 0.11 ^d
E	12.08 ±0.10 ^b	6.14± 0.00 ^e	31.11± 0.46 ^b	1.58± 0.00 ^b	47.93± 0.75 ^e
F	15.47± 0.00 ^a	3.07± 0.35 ^f	42.92 ±0.24 ^a	1.80± 0.00 ^a	44.26± 0.07 ^f

Means bearing different superscript on the same column are significantly different ($p < 0.05$). Sample A(100w), Sample B(90W:10S) Sample C(80W:20S),Sample D(70W:30S), Sample E(60W:40S)and Sample F(50W:50S).

Sensory evaluation

Table 3 shows the result of the sensory evaluation of the *Dubla* samples. The color of the samples ranged from 7.35 to 7.85 and there was no significance difference between sample C and D which are the highest while sample E had the least value. There were

significant differences ($p < 0.05$) in terms of flavor where it ranged from 8.35 to 15.47 and it was observed that sample C had the highest value while sample F had the least. The Taste value ranged from 6.40 to 8.10, sample D (70w30s) had the highest value of about 8.10 while sample F (50w50s) had the lowest value. There was significant difference ($p < 0.05$) in crispness of *Dubla* samples. Sample D (70w30s) % wheat-soy had the highest value of crispness 8.05 and sample E (50w:50s) had the lowest value of 6.50. It was also observed that significant difference ($p < 0.05$) were observed among samples of *Dubla* in terms of overall acceptability where sample D (70w:30s) was the most acceptable and F (50w:50s) was the least which ranged from 6.60 to 8.05 The result indicates that sample D (70w:30s) was the most acceptable and then sample A (100%w).

Table 3. Results for sensory evaluation of *Dubla*

Sample	Color	Flavor	Taste	Crispness	Overall accp.
A	7.75± 0.71 ^b	7.65± 0.81 ^c	7.80± 0.76 ^b	7.90± 0.64 ^b	8.00± 0.64 ^{ab}
B	7.65± 0.74 ^c	7.75± 1.01 ^b	7.80± 1.15 ^b	7.65 ±0.81 ^d	7.85± 0.87 ^c
C	7.80± 1.00 ^a	7.80± 1.15 ^a	7.45± 1.09 ^c	7.70 ±0.80 ^c	7.90± 0.91 ^b
D	7.85± 0.93 ^a	7.32± 1.03 ^d	8.10± 0.71 ^a	8.05 ±0.68 ^a	8.05± 0.80 ^a
E	7.35 ±1.13 ^e	6.95± 1.23 ^e	6.95± 0.94 ^d	7.25± 0.91 ^e	7.30± 0.80 ^d
F	7.48± 1.06 ^d	6.40± 1.14 ^f	6.40 ±1.27 ^e	6.50± 0.76 ^f	6.60± 0.83 ^e

Means bearing different superscript on the same column are significantly different ($p < 0.05$). Sample A(100), Sample B(90W,10S) Sample C(80W,20S),Sample D(70W,30S), Sample E(60W,40S)and Sample F(50W,50S).

4.0 Conclusion

Dubla produced by complimenting of wheat flour with soybean flour (90:10, 80:20, 70:30, 60:40 and 50:50) were found to be nutritionally superior compared to whole wheat *Dubla*. Thus the *Dubla* can conveniently be regarded as acceptable snack in terms of protein quality. However, as the level of soy flour increased the protein content increased significantly ($p < 0.05$) therefore, *Dubla* with higher protein content could be produced by complimenting the wheat flour with soy beans flour.

Reference.

- Adegunwa, M. O., Ganiyu, A. A., Bakare, H. A. and Adebowale, A.A. (2014). Quality evaluation of composite millet-wheat Chinchin. *Agriculture and Biology Journal of North America*, 5(1): 33-39.
- A. O.A C. (American Association of Cereal Chemist) (2000). "Approved Methods of the America Association of Cereal Chemist". St Paul Minnesota, U.S.A.
- Ajani, A.O, Oshundahunsi, O.F, Akinoso, R, Arowora, K.A, Abiodun, A.A and Pessu, P.O (2012). Proximate Composition and sensory Qualities of Snacks Produced from Breadfruits Flour. *Global journal of science frontier research biological science* vol 12 . 7(10)
- Filli, K.B, Nkama I, Abubakar, U.M and Jideani, V.A. (2010) Influence of extrusion

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variables on some functional properties of extruded millet-soybean for the manufacture of *Fura*: A Nigerian traditional food. *African Journal of Food Science*, 4(6):342-352.

Karen, T. Y. (2000). Consumption of junk foods in the United states. *Times international*, Pp:28

Madukwe, E.O, Edeh, R. P. and Obizod I.C. (2013) Nutrient and organoleptic evaluation of cereal and legume based cookies. *Pakistan J. of Nutr.*12(2)154-159

Matz, S. A. (1993). *Snacks food Technology* (3rdEd.). New York Van Nostrand Reinhold.

Meilgaard, M. C., Civile, G. V and Thomas C. B. (2007), *Sensory evaluation techniques*, 4th ed. C. R. C. Press L.L.C., New York, USA.

Nnam, N. M. (2003). Nutrient Composition and sensory properties of Snacks produced from flour blends of some Nigerian indigenous food crops. *Nig. J. Sci.* , 24: 52 -54.