ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 6, Issue, 08, pp.8041-8045, August, 2014

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

DEVELOPMENT AND QUALITY EVALUATION OF CHICKEN NOODLES PREPARED WITH REFINED FLOUR

***[1]Sonali Johri and [2]Geeta Chauhan**

[1]Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, Punjab, India-143005
[2]Division of Livestock Products Technology, Indian Veterinary Research Institute, Izatnagar, Bareilly (UP), PIN-243122

ARTICLE INFO

Article History:
Received 05th May, 2014
Received in revised form
16th June, 2014
Accepted 20th July, 2014
Published online 31st August, 2014

Key words:

Development Quality
Evaluation chicken noodles refined flour.

ABSTRACT

The study was planned to prepare chicken noodle with the incorporation of refined flour. Two types of chicken noodles were prepared. Method of preparation of chicken noodles was same. (Sample A) was without fried chicken noodles, (sample B) was fried chicken noodles. Chicken Noodles were evaluated for physicochemical and sensory properties. Ratio of chicken and refined flour was 50%. Results showed that a fried noodle (sample B) was showed good results on all attributes. The quality parameters studied included physicochemical Moisture %, Ash%, Protein%, fat% and pH showed significant ($P<0.05$) difference in samples, where as Thiobarbituric Acid (TBA) showed non significant difference. As well as sensory evaluation of chicken noodles was done. Fried chicken noodles sample (B) scored the highest values in respect to all sensory attributes as compare to (sample A) without fried sample. Thus, this chicken noodle will be a good source of instant food for children, teenagers, sport persons, pregnant and lactating women.

INTRODUCTION

Noodles are ancient food stuffs which could be defined as a type of dough extruded or stamped in to various shapes for cooking. Recently, research in the field of manufacturing and processing of these products eliminates the need of cooking for a very long period of time Kim (1996). With advent of rapid industrialization, urbanization and change in life style, demand for convenience meat products has increased sofi *et al*. (2010). The noodles also can be made from, rice, buckwheat, and starches derived from potato, sweet potato, and pulses. The corn starch may be used as Binding agent in the noodles yalchin and Basmani (2008), Tan *et al*. (2009). Noodles are one of the most important foods in Asian cuisine. Approximately 40% of the total wheat flour consumed is in the form of noodles in Asia kruger *et al*. (1996), Hou and Kruk (1998). There are variety of noodles available in the market some of them are precooked, dried and commercially packed and needs to be cooked in boiling water for a few minutes prior to consumption chinvista, (2002). In addition to the wheat flour, noodles are made from simple ingredients like water and salt and contain carbohydrates, protein and small amounts of fatty acids. The classification of noodles is based on their ingredients and processing methods. Alkaline noodles or yellow noodles are popular foods in Southeast Asia, Southern China, and Japan Ross *et al*. (1997).Currently, commercial noodles are rich in carbohydrates, but they are deficient in essential Nutrients, such as proteins, dietary fiber and vitamins. For example, the protein deficiency problem could be solved by consuming noodles with foods that are rich in protein Huda (2000), Park and Lin (2005).

Corresponding author: Sonali Johri
Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, Punjab, India-143005.

MATERIALS AND METHODS

Source of chicken meat

The broilers chicken were procured from slaughtered house near Division of Livestock Products Technology, Indian Veterinary research institute izatnagar Bareilly Uttar Pradesh. Deboned chicken meat (DCM) was packed in low density polyethylene (LDPE) bags and stored at 4±10 C in a refrigerator for conditioning and then frozen at -18±10 C for subsequent use.

Salt

The salt used in the study was Sodium chloride (NaCl), Tata salt was procured from local market of Bareilly India.

Refined Flour

The excellent quality refined flour was purchased from local market of Bareilly, Uttar Pradesh.

Water

Looked warm water was used for dough development in chicken noodles.

Preparation of Chicken Noodles

Chicken meat, refined flour and salt were used for preparation of chicken noodles. Mixing of chicken, refined flour and salt was done with the addition of Luke warm water. The dough was allowed to rest at room temperature. The prepared dough was extruded through the manually operated stainless steel extruder into long shape in tray. Chicken noodles Sample (A) had not fried in oil. It was kept directly for drying. Chicken Noodles Sample (B) was fried in oil. After frying it was kept for drying. The trays of both samples were kept in a hot air oven (SciTech) at 65 ±20C for required time (7-8 hours) for drying of chicken noodle. Chicken noodles were packed and sealed with the help of a sealer (Singhal®, HSP-200, in presterilised LDPE. The LDPE bags containing chicken noodles were kept at ambient temperature for the further analysis of different physicochemical parameters (pH, moisture, ash, fat, protein and yield percentage) and sensory characteristics appearance, flavour, texture, Binding, juiciness, aftertaste and over all acceptability was judged by panel of judges for acceptability of chicken noodles. Dried chicken noodles were cooked with enough water with the addition of Maggie masala. Prepared noodles were served to the panel of judges for sensory evaluation in Division of live stock products technology.

Cooking yield

Distilled water (100 mL) in a beaker was heated on a hotplate. Dried noodles of 10 g were weighed with an analytical balance and put in a beaker. The noodles were cooked in boiling water for 5 min. after cooking of 5 minutes noodles were taking out from the hot plate. During the cooking process, the beaker was covered with aluminum foil. The cooked noodles were separated from the cooking water, and the noodles were cooled for 15 min. The weight of cooked noodles was measured after cooling.

Proximate Analysis

The noodles were analyzed for pH, moisture, ash, protein, fat and content using standard procedures AOAC (2000).Using hot air oven, Soxhlet extraction apparatus and kjeldahl assembly respectively. The pH was determined by homogenizing 20 g of chicken noodles in 80 ml of distilled water in Ultra Turrex T25 tissue homonogenizer at 7000- 10000 rpm for 1 min. the pH of suspension was measured using a digital ph meter (Model CP901; Centuray instruments Ltd., Mumbai).

Sensory evaluation

The sensory qualities of samples were evaluated using 8 point descriptive scale Keeton (1983). By 12 panelists of Division of live stock products technology. The evaluation was based on sensory characteristics appearance, flavour, texture, Binding, juiciness, aftertaste and over all acceptability to determine acceptability of chicken noodles.

Statistical analysis

Data were analyzed statistically on 'SPSS-16.0' software package as per standard methods Snedecor and Cochran. (1994).Duplicate samples were drawn for each parameter and the experiment was replicated thrice. Sensory evaluation was performed by a panel of 12 member Data were subjected to one way analysis of variance and level of significance among the treatments. The critical difference at $p<0.05$ was estimated and used to find significant difference.

RESULTS AND DISCUSSION

Mean values of physicochemical characteristics of chicken noodles are depicted in Table 3.

Table 1. Formulation of refined flour based chicken noodles

Ingredients	A (WFN)	B (FN)
Chicken	50%	50%
Refined Flour	50%	50%
Salt	2%	2%
Water	75%	75%

A (without Fried noodles)
B (Fried Noodles)

Table 2. Yield of chicken noodles

Trial 1		Trial 2	
Chicken Before cooking	108	Chicken Before cooking	105
After cooking	85.81	After cooking	85
Batter weight	187.7	Batter weight	190
Prepared Noodles	161	Prepared Noodles	174
Dried weight	107	Dried weight	121
Handling loss	6.1	Handling loss	8.0
Other loss	20.7	Other loss	25.6

pH: The mean pH of without Fried chicken noodles (sample A) was 6.32±0.09 was higher as compare to fried chicken noodles 6.2±0.05 (sample B). Further significant decrease ($P<0.05$) was observed between sample A and sample B. The decline in pH with meat content was due to the acidic nature of chicken meat. This finding was very well agreed with the reports of yu (1990) on fish noodles and chin *et al*. (2012). Who incorporated surimi powder in wet yellow noodles preparation.

Moisture: The mean moisture of (sample A) fried chicken noodles was 3.655±0.69 lower as compare to fried chicken noodles 3.876±0.899 There is a significant ($P<0.05$) difference between sample A and sample B. The increased moisture percent with increase in meat level might be due to high moisture contents in chicken meat as compared to the flour used. This finding was in favour of the reports given by Zayas (1997).

Ash: The mean Ash of without fried chicken noodles was 3.045±0.445 higher as compare to (sample B) 2.11±0.14 fried chicken noodles. There is a significant ($P<0.05$) difference between sample A and sample B. The significant ($P<0.05$)

Table 3. Physicochemical parameters of refined flour based chicken meat noodles (Mean±SD)

sample	pH	Moisture%	Ash%	Protein %	Fat%
A (WFN)	6.32±0.09	3.655±0.69	3.045±0.445	22.905±0.875	7.085±0.135
B (FN)	6.2±0.05	3.876±0.899	2.11±0.14	26.435±0.185*	7.4±0.5*

**Data represent means values± SD for two independent trials* (P<0.05)
A (without Fried noodles)
B (Fried Noodles)

Table 4. TBA values of refined flour based chicken noodles (Mean±SD)

TBA sample	0 Day	10 Day	20 Day
A (WFN)	0.061±0.017	0.75±0.011	0.869±0.24
B (FN)	0.845±0.030	0.966±0.06	0.979±0.04

**Data represent means values± SD for two independent trials* (P<0.05)
A (without Fried noodles)
B (Fried Noodles)

Table 5. Sensory scores of refined flour based chicken meat noodles (Mean±SD)

Sample	Appearance	Flavour	Texture	Binding	Juiciness	Aftertaste	Overall Acceptability
A (WFN)	6.26±0.62	6.67±0.47	6.24±0.97	6.36±0.66	6.9±0.37	6.73±0.48	6.57±0.50
B(FN)	6.67±0.70	6.77±0.76	6.58±0.74	6.70±0.46*	6.12±0.85	6.15±0.73	6.61±0.91*

**Data represent means values± SD for two independent trials* (P<0.05)
A (without Fried noodles)
B (Fried Noodles)

effect on ash contents was also observed by the Chin *et al*. (2012) in surimi based wet yellow noodles and Eyidemir and Hayta (2009). In apricot kernel flour based noodles.

Protein: The mean protein content of (sample B) 26.435±0.185 was higher as compare to without fried noodles (sample A) 22.905±0.875. There is a significant (P<0.05) difference between sample A and sample B. Similar trend of increased protein contents with increase in fish meat in fish noodles was also reported by yu, (1990), Peranginagin *et al*. (1995) on dried noodles incorporated with surimi.

Fat: The mean fat content of (sample A) 7.085±0.135 was lower as compare fried chicken noodles (Sample B) 7.4±0.5. There is a significant (P<0.05) difference between sample A and sample B. The increasing trend of fat content in products with increased meat level might be due to higher contents of fat in chicken meat in comparison to the flours used Verma *et al*. (2012) also found increase in fat content with increase in meat replacement during the preparation of chicken meat noodles.

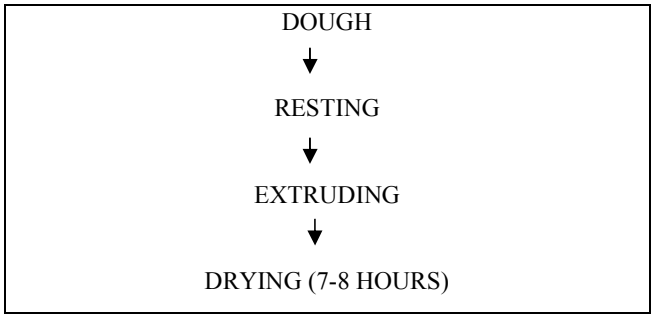

Fig. 1. Production of without fried chicken noodles

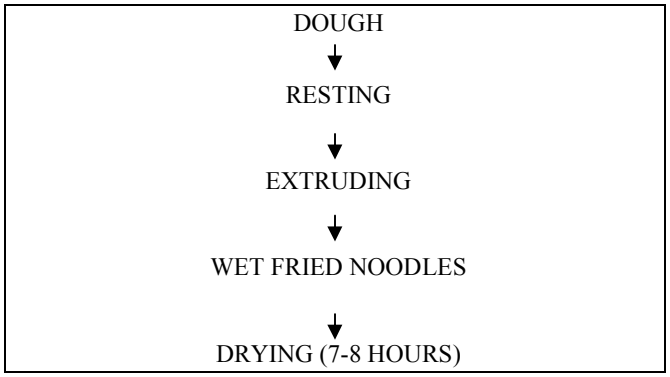

Fig. 2 Production of fried chicken noodles

TBA Value of refined flour based chicken noodles (Mean±SD)

Changes in the TBA (2-thiobarbituric acid) value were determined to asseslipid oxidation according to the method of Witte *et al*. (1970). TBA value were read in triplicates for chicken noodles samples.20 g of chicken noodles sample, 20 % trichloroacetic acid in amount of 50 ml was added and then thoroughly mix through a homogenizer. This homogenate was transferred to a 100 ml measuring flask, after which 100 ml distilled water was added and then filtered by whatman filter paper No.1. Five mL filtrate added with 5 mL of TBA reagent (0.005 Min distilled water) was continuously mixed using a vortex mixer and kept in dark room for 30 minutes. The measured value showed an absorbance value at 530 nm using a spectrophotometer.

As presented in Table 4. TBA 2-thiobarbituric acid sample was studied for 0 to 20 days of 10 days interval. Both the samples were kept for storage in air tight container. (Sample A)

Without fried sample mean values of TBA on 0, 10 and 20 days was 0.061±0.017, 0.75±0.011 and 0.869±0.24. Further a significant increase ($P<0.05$) was observed in (sample A). (Sample B) fried sample mean values on 0, 10, 20 days was 0.845±0.030, 0.966±0.06 and 0.979±0.04 respectively. An increase in TBA value is an indicator of the development of oxidative rancidity. The volatile compounds are formed as a result of the oxidation of polyunsaturated fatty acids (PUFA) present in meat products. Such an increase in TBA value during storage due to oxidative rancidity has been reported by many workers (Reddy and Rao, (1997). TBA value of (sample B) fried noodles was higher as compare to (sample A) without fried noodles.

Sensory evaluation

The scores of sensory evaluation were obtained on various sensory attributes such as appearance, flavour, texture, Binding, juiciness, aftertaste and over all acceptability. All the values obtained for the sensory attributes of both sample of chicken noodles were very well accepted by the sensory panelists. The sensory attributes of the cooked noodles were evaluated by 12 experienced scientist of Division of live stocks products technology Indian veterinary research institute Bareilly (U.P). All samples were evaluated using an eight point hedonic scale, where 8 denoted extremely desirable and one denoted extremely undesirable. Sensory evaluation studies are of importance from the point of view of the processor as well as the consumers. The scores of sensory evaluation were obtained on various sensory attributes such as appearance, flavour, texture, Binding juiciness, after taste and over all acceptability. All the values obtained for the sensory attributes of both sample of chicken noodles. Fried chicken noodles sample (B) scored the highest values in respect to all sensory attributes. Appearance, flavor, texture, binding, juiciness and overall acceptability scores were significantly higher ($P<0.05$) in sample B fried chicken noodles as compare to (sample A) without fried chicken noodles. There was a significant difference between sample A and sample B. This result was in agreement with the observations made by Breen *et al*. (1977), Peri *et al*. (1983) Confirm that on incorporation of small quantity of milk protein enhanced the organoleptic properties of the extruded products.

Conclusion

In conclusion, preparation of chicken noodle with the incorporation of refined flour has an impact on the Physicochemical and sensory properties of chicken noodles. This study provides useful functional information for the future development of refined flour based chicken noodle. The study shows that noodles prepared with sample B fried chicken noodles shows good results in physicochemical and sensory attributes. Thus, this chicken noodle will be a good source of instant food. Future emphasis can be given on development of chicken noodles with different flour, which has got increased demand of instant food in market.

Acknowledgement

The authors express their sincere gratitude and thanks to the Director, Indian Veterinary Research Institute Bareilly (UP) for financial assistance and facilities provided for of the research work.

REFERENCES

AOAC, 2000. Official Methods of Analysis (17th ed.), Washington D.C. Association of Official Analytical Chemist.

Breen, M.D. Banasik, O.J. and Walsh, D.E. 1977. Use of various protein sources in Pasta. Macaroni. *Journal*., vol 26 (2): 34.

Chin, CK. Huda, N. and Yang, TA. 2012. Incorporation of surimi powder in wet yellow noodles and its effects on the physicochemical and sensory properties. *International Food Research Journal*., vol 19: 701-707.

chinvista.com. 2002 i.e. http//www.chinavista.com/experience/noodle/noodle.html,137 148,

Eyidemir, E. and Hayta, M. 2009. The effect of apricot kernel flour incorporation on the physicochemical and sensory properties of noodle. *African Journal of Biotechnology*., vol 8 : 85-90,

Hou, G.Q. and Kruk, M. 1998. Asian Noodle Technology. AIB Technical Bull 10.

Huda, N. Abdullah, A. and Babji, A.S. 2000. Nutritional quality of surimi powder from threadfin bream. *Journal of Muscle Food*., 11: 99-109.

Keeton, JT. 1993. Effect of fat and sodium chloride phosphate levels on the chemical and sensory properties of pork patties. *Journal of Food Science*., vol 48: 878-881.

Kim, S.K. 1996. Instant noodle technology. Cereal Foods World, vol 41: 213-214, 1996.

Kruger, J.E. Matsou, R.B. and Dick, J.W. 1996. Pasta and noodles technology. American Association of Cereal Chemists, Minnesota, USA.

Park, J.W. and Lin, T.M. J. 2005.Surimi: Manufacturing and evaluation, In Park, J. E. (Ed.). Surimi and Surimi Seafood, 33-106. New York, USA, Taylor &Francis.

Peranginangin, R. Haq, N. and Sugiyono, Penelitian. peningkatan, kandungan. 1995. protein mie basah dan mie kering yang disuplementasi ikan lumat atau surimi. In: Prosiding Simposium Perikanan Indonesia I Buku II. (Cholik, F., ed.), Prosiding Simposium Perikanan Indonesia. Badan Penelitian dan Pengembangan Pertanian, Jakarta 25-27.

Peri, C. Barbieri, R. and Casiraghi, E.M. 1983. Physical, chemical and nutritional quality of extruded corn germ flour and sweet potato. *International Journal of Food Science Technology*., vol 35: 235-242.

Reddy, PK. And Rao, JB. 1997. Influence of binders and refrigerated storage on certain quality characteristics of chicken and duck meat patties. *Journal of Food Science and Technology*., vol 34: 446-449.

Ross, A.S. Quail, K.L. and Crobie, G.B. 1997. Physicochemical properties of australian flours influencing the texture of yellow alkaline noodles. *Cereal Chemistry*., 74 vol 6: 814-820.

Snedecor, G.W. and Cochran, W.G. 1994. Statistical methods, 8th Edn. The Iowa State University Press Ames, Iowa, USA.

Sofi, H. Asif, Wani. Sarfarz, A. Haq. Zahoorul, Pal. MA, Salahuddin. M, and Malik. AH. 2010. Survey of meat

products sold in Srinagar city SKUAST. *Journal Research*. vol 12: 91-94.

Tan, H.Z. Li., Z.G. and Tan, B. 2009. Starch noodles History, classification, materials, processing, structure, nutrition, quality evaluating and improving. *Food Research International*., vol 42: 551-576.

Verma, AK. Pathak, V. Singh, VP. 2012. Incorporation of chicken meat in rice flour based noodles and its effects on physicochemical and sensory qualities. *International Journal of Current Research*., vol 4: 461-466.

Witte, V.C. G.F, Krause and M.E, Bailey. 1970. A new extraction method for determining 2-thiobarbituric acid values of pork and beef during storage. *Journal of Food Science*., vol 35: 582-585.

Yalchin, S. and Basmani, A. 2008. Quality characteristics of corn noodles containing gelatinized starch, transglutaminase and gum. *Journal of Food Quality*., vol 31: 465-479.

Yu, SY. 1990. Fish noodles, Papers presented at seventh session of the indo-pacific fishery commission working party on fish technology and marketing. Bangkok, Thailand, 19-22 April 1988. FAO Fisheries Report No. 401 Supplement, 224-230.

Zayas, JF. 1997. Functionality of Proteins in Food. Springer. Heidelberg, Berlin, 568-586.

****