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Research Article

Study on Sensory Evaluation of Multi Flour Noodles during Storage

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ABSTRACT

The present study was undertaken to develop noodles from the multi-flours. Multi-flours were prepared by blending wheat flour with soy bean, carrot, mushroom and apple pomace powder in ratios of (T_{100}) 100:0:0:0:0, (T_{90}) 90:2.5:2.5:2.5:2.5, (T_{80}) 80:5.0:5.0:5.0:5.0, (T_{70}) 70:7.5:7.5:7.5:7.5, (T_{60}) 60:10:10:10:10 and (T_{50}) 50:12.5:12.5:12.5:12.5 respectively. Overall acceptability for multi-flour noodles was awarded highest score for T_{90} followed by T_{80}, T_{70}, T_{60} and T_{50} as compared to control noodles. All noodles coincided in the range of 'like moderately' to 'like very much' for multi-flours noodles while 'like slightly' to like moderately' for control noodles.

Key words: *Multi-flour, Noodles and Sensorial attributes*

INTRODUCTION

Instant noodles are widely consumed throughout the world and it is a fast growing sector of the noodle industry[3]. This is because instant noodles are convenient, easy to cook, low cost and have a relatively long shelf-life. Noodle products are staple food in many parts of Asia, especially throughout South East Asia. In many developing countries the use of composite flours have the following advantages (a) saving of hard currency, (b) promotion of high yielding, native plant species (c) better supply of protein for human nutrition, and (d) better overall use of domestic agricultural production[4,5]. Wheat flour which is usually used to make instant noodles is not only low in fibre and protein contents but also poor in essential amino acid, lysine. Flour of hard wheat (*Triticum aestivum* L.) is the main primary ingredient[6] and the addition of alkaline salts can help strengthen the structure and hence improve the firmness of the final product[7]. A number of studies have been carried out for acceptable quality and good acceptance of food products made from cereal and legume flours supplemented with soya flour[9,10]. Oyster Mushroom (*Pleorotus ostreatus*), is a mushroom that can be utilized for food and supplement to maintain the body fitness. They contain protein, carbohydrate, fat, fiber, moisture, vitamins, minerals and secondary metabolites.

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Its statins compound is outstanding to reduce a bad plasma lipid and blood pressure; hence it can lessen the risk of cardiovascular diseases. In addition, its beta-glucan can stimulate the body immune system. It has been reported that Oyster Mushroom effectively combat cancer, microbial infection and diabetic[11]. The development of new products is a strategic area of the food industry. Traditional noodles are claimed to lack other essential nutritional components such as dietary fiber, vitamins, minerals, and bioactive compound. Thus, noodle products are suitable for enhancing health after incorporating sources of fiber and essential nutrients[8].

MATERIAL AND METHODS

The experiments were conducted in Bakery Lab and Food Analysis Laboratory in the Department of Agricultural Engineering, Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut (India).

Raw materials

Composite flour was prepared from wheat flour, soya bean flour, carrot powder, mushroom flour and apple pomace powder.

Development of Noodles

Wheat flour was mixed with soya bean flour, carrot powder, mushroom flour, and apple pomace powder and noodles were prepared according to the following treatments using the recipe described below:

Treatments

T_1 - Noodles made by 100% wheat flour

T_2 – 270g wheat flour, 7.5g soya bean flour, 7.5g carrot powder, 7.5g mushroom flour and 7.5g apple pomace powder.

T_3 - 240g wheat flour, 15g soya bean flour, 15g carrot powder, 15g mushroom flour and 15g apple pomace powder.

T_4 - 210g wheat flour, 22.5g soya bean flour, 22.5g carrot powder, 22.5g mushroom flour, and 22.5g apple pomace powder.

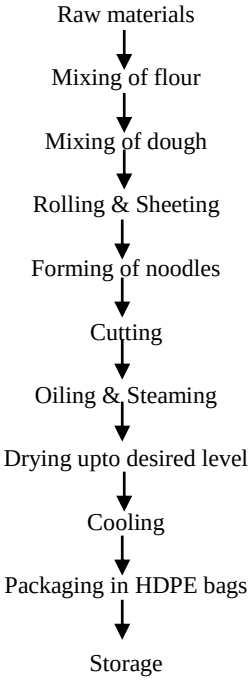
T_5 - 180g wheat flour, 30g soya bean flour, 30g carrot powder, 30g mushroom flour, 30g apple pomace powder.

T_6 - 150g wheat flour, 37.5g soya bean flour, 37.5g carrot powder, 37.5g mushroom flour, 37.5g apple pomace powder.

Experimental Procedure

Proper mixing of wheat flour with multi-flour in different ratio was carried out properly by hand until the formation of firm dough. The dough was rolled out in a baking tray and cut into round in shape with a noodle making machine. After cutting, oiling and then steaming was done. The noodles were placed in trays and dry in tray dryer at 60ºC for 60 minutes. The noodles were kept out from tray dryer and cooled at room temperature. At last, the cooled noodles were packed into HDPE bags and stored for further studies at room temperature.

Fig. Flow chart for the development of multi-flour noodles



Sensorial evaluation

A semi trained panel consisting of both genders more than 10 judges of different age groups having different eating habits was constituted to evaluate the quality. The judges were selected from the faculty staff and students of Department of Agricultural Engineering, Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut (U.P.). Samples were served to the panelists and they were asked to rate the acceptability of the product through sense of organs. The overall acceptability of noodles were rated on the basis of 9- point hedonic scale ranging from 1 (extremely dislike) to 9 (extremely like).

RESULTS AND DISCUSSION

Effect on sensory evaluation of multi- flour noodles

Sensory quality of multi flour noodles was evaluated for stored samples after 0, 15, 30, 45 and 60 days. The samples were served to panelists colour, taste, flavor, texture and overall acceptability were selected as sensory attributes on 09 point hedonic scale were shown in figure 3.1.1 to 3.1.5. The study was conducted under ambient condition and related evaluations were conducted after every 15 days.

Effect on colour

The sensory data for variation in colour score of wheat flour and multi- flour noodles during storage period are presented in fig.1. The score for colour ranged from 8.6 - 8.0. The colour score was evaluated for T_{90} noodles (8.6), followed by T_{80} (8.5), T_{70}& T_{100} (8.4), T_{60} (8.2) and T_{50} (8.0). The data for colour scores was decreased with increase storage period under room condition. The colour score decreased for T_{100} noodles (8.4 to7.8), T_{90} (8.6 to 8.1), T_{80} (8.5 to 8.2), T_{70} (8.4 to 8.0), T_{60} (8.2 to 7.7) and T_{50} (8.0 to 7.6) upto 60 days of storage periods, respectively. Similar trends finding was reported by[1].

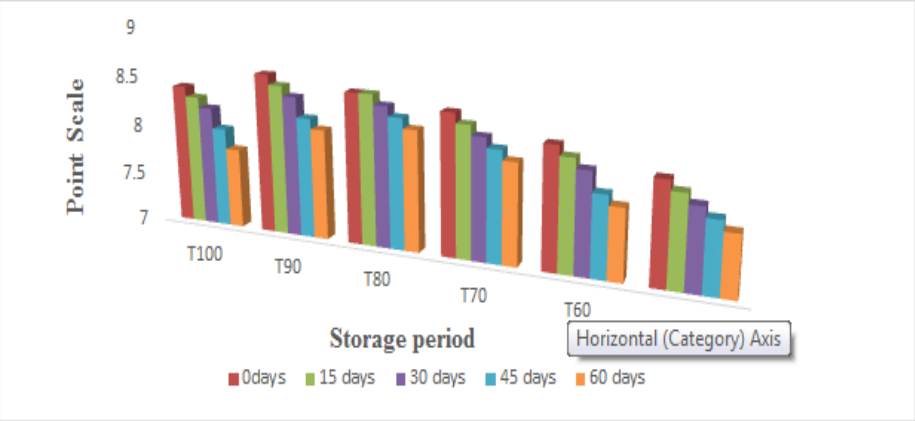


Fig. 1: Sensorial evaluation (colour) of multi-flour noodles

Effect on taste

The sensory data for variation in taste score of wheat flour and multi-flour noodles during storage period are presented in fig. 2. The score for taste ranged from 8.5-7.8. The taste score was evaluated for T_{90} noodles (8.5) followed by T_{80} (8.4), T_{100}& T_{70} (8.3), T_{60} (8.0) and T_{50} (7.8). The data for taste scores was decreased with increase storage period under room condition. The taste score decreased for T_{100} noodles (8.3 to 7.9), T_{90} (8.5 to 8.1), T_{80} (8.4 to 8.0), T_{70} (8.3 to 7.9), T_{60} (8.0 to 7.5) and T_{50} (7.8 to 7.3) upto 60 days of storage period, respectively. Taste score decreased with increasing incorporation of different flours like soy bean flour, carrot flour, mushroom and apple pomace powder with wheat flour in the formulation of noodles. Similar research was reported by[2].

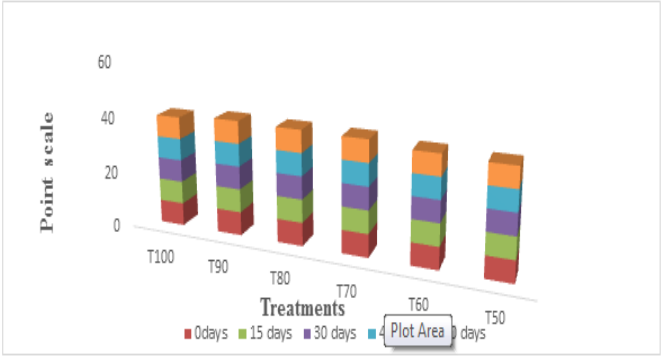


Fig. 2: Sensorial evaluation (taste) of multi flour noodles

Effect on flavour

The sensory data for variation in flavour score of wheat flour and multi flour noodles during storage period are presented in fig. 3. The score for flavor ranged from 8.1 to 7.2. The flavour score was evaluated for T_{100} noodles (8.1) followed by T_{90} (8.0), T_{80} (7.8), T_{70} (7.7), T_{60} (7.5) and T_{50} (7.2). The data for flavour scores was decreased with increase storage period under room condition. The flavor score decreased for T_{100} noodles (8.1 to 7.6), T_{90} (8.0 to7.5), T_{80} (7.8 to 7.3), T_{70} (7.7 to 7.2), T_{60} (7.5 to 7.1) and T_{50} (7.2 to 6.7) upto 60 days of storage period, respectively. Similar research finding was reported by[1].

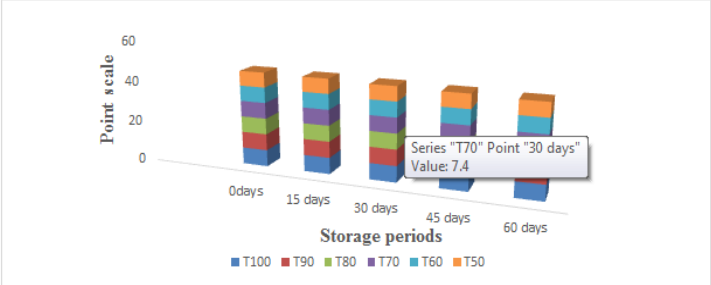


Fig. 3: Sensorial evaluation (flavour) of multi flour noodles

Effect on texture

The sensory data for variation in texture score of wheat flour and multi- flour noodles during storage period are presented in fig. 4. The score for texture ranged from 8.0-7.2. The texture score were evaluated for T_{100} and T_{90} noodles (8.0) followed by T_{80} (7.9), T_{70} (7.7), T_{60} (7.5) and T_{50} (7.2). The data for texture scores was decreased with increase storage period under room condition. The texture score decreased for T_{100} noodles (8.0 to 7.5), T_{90} (8.0 to 7.4), T_{80} (7.9 to 7.3), T_{70} (7.7 to 7.1), T_{60} (7.5 to 7.0) and T_{50} (7.2 to 6.8) upto 60 days of storage period, respectively.

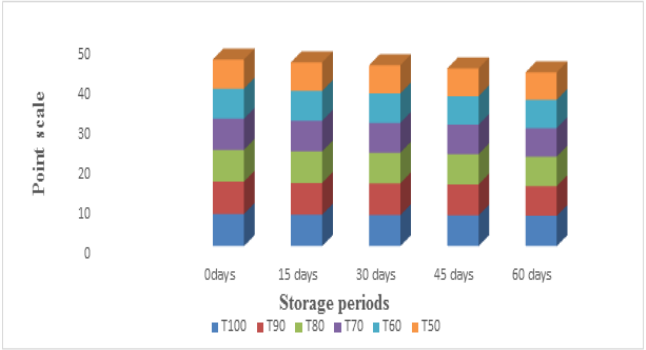


Fig. 4: Sensorial evaluation (texture) of multi-flour noodles

Effect on overall acceptability

The sensory data for variation in overall acceptability score of wheat flour and multi-flour noodles during storage period are presented in fig. 5. The score for overall acceptability ranged from 8.27 -7.55. The overall acceptability score was evaluated for T_{90} noodles (8.27) followed by T_{80} & T_{100} (8.15), T_{70} (8.02), T_{60} (7.8) and T_{50} (7.55). The data for overall acceptability scores was decreased with increase storage period under room condition. The overall acceptability score decreased for T_{100} noodles (8.15 to 7.70), T_{90} (8.27 to 7.77), T_{80} (8.15 to 7.70), T_{70} (8.02 to 7.55). T_{60} (7.80 to 7.32) and T_{50} (7.55 to 7.10) upto 60 days of storage period, respectively.

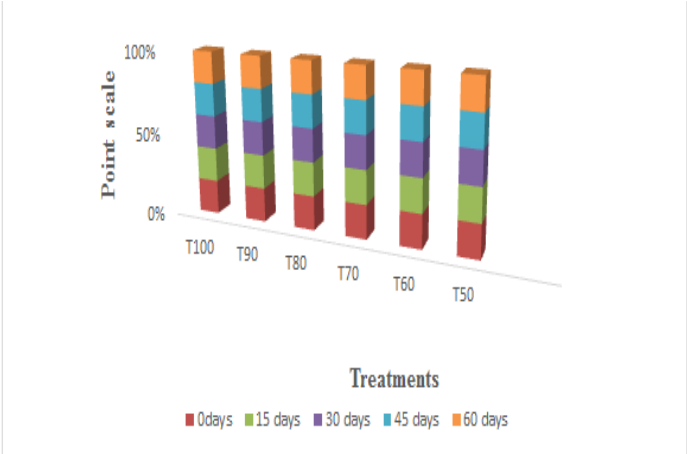


Fig. 5: Sensorial evaluation (overall acceptability) of multi-flour noodles

CONCLUSION

Sensorial data revealed that Overall acceptability of noodles increased with increasing in the incorporation of soy bean flour, carrot powder, mushroom and apple pomace powder with wheat flour in the formulation of noodles. The noodles prepared with the flour ratio of 50:12.5:12.5:12.5:12.5 liked most of the panelists. Incorporation of above flours to wheat flour would therefore be an effective method of cost reduction of biscuits and other allied products and solving malnutrition problems in children in India.

Acknowledgment

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