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Research Paper

Development of Lycopene Rich Noodles

Home Science

KEYWORDS : Tomato puree, Lycopene.

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ABSTRACT

The present study was conducted to prepare the tomato puree fortified Noodles. Noodles prepared without adding formulated tomato puree were kept as control. The organoleptic properties of the experimental noodles like colour, appearance, flavour, crispiness, taste and over all acceptability were evaluated sensorily and recorded highest score compared to the plain noodles served as control.

INTRODUCTION

Health is the level of functional or metabolic efficiency of a living organism. In Humans, it is general condition of a person's mind and body, usually meaning to be free from illness, injury or pain (Merriam Webster Dictionary, 2001). Health and nutrition are the most important contributing factors for human resource development of the country. Nutrition is a basic human need and a pre-requisite for healthy life (NIN, 1998). Sensible and healthy food habits right from childhood coupled with good life style can not only delay ageing and increase the life span, but also add to the quality of life (Ghafoorunissa and Krishnamoorthy K, 1994). "Let food be thy medicine and medicine be thy food"– Hippocrates.

The Tomato (Lycopersicon esculentum) is a perennial plant originated from South America in the family Solanaceae (Silva D.J. H., et al 2008). Tomatoes are also an excellent source of free radical-scavenging vitamin C and vitamin A as well as bone-healthy vitamin K, enzyme promoting molybdenum; heart-healthy potassium, vitamin B6, folate, and dietary fiber; blood glucose-balancing manganese (Jacob K (2010). Tomato and tomato-based are the major sources of lycopene in the human diet (Nguyen and Schwartz, 1999). Lycopene, the major carotenoid in tomato fruit, is a powerful antioxidant, anti-inflammatory and also has an antimicrobial property and has generated much attention because of the linkage between lycopene-rich diets and lower risks of certain cancers, heart disease, and age-related disease (Silaste M.L., et al, 2007).

There is strong evidence that the reactive oxygen species play a significant role in the causation of several chronic diseases and natural antioxidants are the protective agents to inactivate reactive oxygen species to delay or prevent oxidative damage (Halliwell, 1994).

Per 100g of the tomato puree is loaded with energy 39 kcals, protein 1.7g, Total fat 0.2g, Total carbohydrates 8.9g, Total fiber 0.4g, ash 2.2g in addition to its mineral package of calcium 13 g, phosphorus 34 g, iron 1.7g, potassium 426 mg and sodium 399mg (Gould, 1992). Lycopene content of tomato puree is around 195.6mg/kg (Rao A.V., et al, 1998).

The tomato products suggest a synergistic action of lycopene with other nutrients, in lowering biomarkers of oxidative stress and carcinogenesis (Basu A and Imrhan, 2007). Lycopene intake as well as serum lycopene levels shows inverse relation to several cancers including prostate, breast, cervical, ovarian, liver and other organ sites (Giovannucci E, 1999). Lycopene is also shown to significantly reduce the levels of oxidized LDL (LDLox), which is also thought to play a key role in the pathogenesis of arteriosclerosis which is the underlying disorder leading to heart attack and ischemic strokes (Agarwal S and Rao A.V., et al, 1998).

Convenience has an immense impact on the food choices of today's consumers. This suggests that food products offering less convenience will be less preferable to consumers. Therefore, adding convenience traits to certain products that are deemed healthy and/or beneficial could increase the consumption of the specific food products (Wales, 2009). The Utilization of Noodles, one of the most popular Ready To Cook (RTC) convenience food product, as the supplementation vehicle for delivering different nutrients is on the recent trend. Noodles made out of refined flour are nutritionally scarce and does not meet up with the vital micro- and macro-nutrients. Under such conditions, the process of fortification and enrichment is strongly considered by many health experts to enhance the nutritive value of the commercial foods and to fulfill the emerging demands of the modern dietary habits of the present generation.

MATERIALS AND METHODS

Ripened red tomatoes were selected for preparation of the puree. Tomatoes were initially cleaned and then boiled in medium flame for 10 minutes. The skin was peeled out. The stem part and the seeds were discarded. Blanched tomatoes were pureed in a mixer to a smooth paste without the addition of water. Again, the puree was put on flame for other 10 minutes for increasing its concentration with little added salt.

Treatment details

The treatments for preparation of Tomato puree fortified noodles (Lycored Noodles) were as follows:

The formulated tomato puree was given to a local noodles manufacturing unit. The formulated tomato puree was incorporated into the noodles in the ratio 1:4. Initially a dough mixture was made with all the ingredients such as refined flour, formulated tomato puree, water and salt with vigorous kneading. Smooth dough was then rolled into the continuous belt like sheets in a roller and was further subjected to a cutter which shreds the dough sheet into fine Lycored noodle threads which was subjected to steaming at 98°c for 18 – 20 minutes. Then, the final steps of shaping and drying of lycored noodles in oven at 200°c for 8 hours was done to deliver as an instant Ready To Cook Noodles. Sensory evaluation of lycored Noodles were carried out by 10 am among the semi-trained panel judges of fifteen numbers including the post-graduate nutrition students of Mother Teresa Women's University and IGNOU (The Indira Gandhi National Open University), Chennai. The cooked noodles were placed for evaluation. The specific sensory characteristics of Noodles viz., firmness, size, elasticity, surface adhesiveness, granularity, chewiness with other general characteristics viz., colour, size, taste and over all acceptability were evaluated using a rating scale adapted from the book of (Hoo G.G., 2010). The mean Scores given by fifteen judges were used for statistical analysis.

RESULTS AND DISCUSSION

The organoleptic properties of Noodles were evaluated visually, palpatory (firmness, size, elasticity, surface adhesiveness), gustatory (Chewiness, granularity, taste, colour), olfactory and

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overall acceptability. The statistical analyses of the data were depicted in the Table 1. The data reveals that there were significant differences at the level of 1% significance among the control and experimental Noodles. The highest scores were recorded for the experimental Noodles in all the quality attributes such as the highest scores for aroma (9.5), surface adhesiveness (9) was recorded for tomato puree incorporated Noodles which was on par with the control Noodles of lowest scores for aroma (8.5), and surface adhesiveness (8) respectively. The highest score of 10 was recorded for experimental Noodles which was on par with the control Noodles with low score of 8.5.

CONCLUSION

The wide spread popularity of Noodles from kids to adults makes this product, a good option for fortification. This Ready To Cook (RTC) convenience food can surely serve as suitable vehicle for improving nutrient intake without compromising its organoleptic properties. It has a better commercial value with unique package of anti-oxidants especially lycopene of special mention at an affordable price.

Table 1: Results of Statistical analysis of scores given by panel judges for the lycopene rich Noodles versus Plain Noodles

Products	Mean±SD	t value	Level of Significance
Plain Noodles(Control)	90.4±6.06	2.33	1%
Lycopene rich Noodles	94.7±4.1		

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