

# Formulation of pasta incorporated from linseed flour

Pragya Mishra and Suman Devi

Pasta was prepared from whole wheat flour, linseed flour and spinach powder (WWF:LF:SP). Linseed flour was incorporated at three percent level viz., 10,15 and 20 per cent. Spinach powder content was constant i.e. at 5 per cent sensory evaluation of pasta prepared was done using nine point hedonic scale. Nutritional evaluation of pasta included estimation of moisture, crude protein, crude fibre crude fat, carbohydrate, fat, iron, calcium of pasta in the range of 10.83 per cent, 11.84 per cent, 6.80, 4.80, 63.53 per cent, 2.20, 10.76 mg, 135mg by AOAC (1995) and Ranganna (2003). The result of study was revealed that 6.20 mean score of the 20 per cent linseed flour pasta. Breakfast cereal pasta have found 3 mg iron and 30 mg calcium in one serving bowl to fulfil the requirement of school going children according to the RDA whereas linseed rich pasta beneficial to health and combat the malnutrition.

**Key Words :** Pasta incorporated, Linseed flour

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## INTRODUCTION

As the industry has responded to consumer demand for a more health full supply, the variety of the functional foods that are consistently available to consumer grown tremendously and functional foods account for increasing percentage new food products (Anonymous, 2003). Health and convenience are the two major factors during today's development of breakfast snack and variety products. Realizing the malnutrition problems of low-income group people and pre-school children, the need of upgrading of nutrition is becoming a major concern. In some areas poor economy, scarcity of certain foodstuffs

is becoming the reason of malnutrition. Pasta is an extensively food usually made from wheat, which is consumed in most countries worldwide. It is however, rather low in protein and is relatively deficient lysine, an essential amino acid. This is especially important for efforts to feed the hungry using pasta as the primary source of calorie and protein. Pasta products such as macaroni, spaghetti, noodles are very popular in Europe and in the western hemisphere. However, the consumption of the convenience food is increasing rapidly with the advance in economic condition of developing countries too. In India use of pasta products are increasing steadily. Pasta products are good source of carbohydrate and moderate source of proteins, but some essential amino acids and fibre content are low (Sowbhgya and Ali Zakiuddin, 2001). As wheat derived staple food, pasta is second to bread in world consumption. Its worldwide acceptance is attributed to its low cost, ease of preparation, versatility, sensory attributes and long shelf-life. Adding protein to food products is relatively simple provided that protein sources have been identified. The

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most frequently considered sources of protein for fortification include cereal grains (wheat). Chung *et al.* (2004) reported that lutein, a carotenoid protective against eye diseases such as age-related macular degeneration and cataract, is found in green vegetables, especially spinach, as well as kale and broccoli. Linseed comes from the family Linaceae, Genus *Linum* which include majority of the herbs and surbs found in temperate and subtropical regions bordering the Mediterranean Sea. Lucas *et al.* (2002) studied a flax seed improves lipid profile without altering biomarkers of bone metabolism in post menopausal women. Linseed has got a great economic value for the commercial utility of its oil and fibres. Linseed has numerous medicinal uses.

## METHODOLOGY

Wheat flour and Linseed flour was purchased from the local market and spinach leaves was also purchased from the local market and cleaned, washed, dried (hot oven 75°C for 5 hour) and after drying, grind the leaves, then sieved 20 mesh sieves then produced powder. Spinach powder was incorporated with wheat flour at different levels 03, 05, 07, 10 per cent. To standardized the level of spinach powder to make pasta and cooked, with organoleptic evaluation by semi skilled panel. On the basis of overall acceptability 05 per cent spinach powder was acceptable. Pasta was prepared with the help of the pasta making machine (La man farina Italy). Pasta containing wheat flour, linseed flour and spinach powder in different blends (85:10:05, 80:15:05 and 75:20:05).

## Proximate analysis:

Pasta were prepared from different blends were analyzed their proximate composition using standard method of AOAC (1995).

## Organoleptic evaluation:

Sensory quality like colour, flavour, texture, taste and overall acceptability of pasta was evaluated by semi skilled panel by using 9 point hedonic scale.

## Statistical analysis:

The data was statistically analyzed by one way ANOVA test.

## OBSERVATIONS AND ASSESSMENT

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

## Proximate analysis:

Table 1 showed WF:LF:SP (75:20:05, 80:15:05 and 85:10:05) pasta of moisture was 8.79 to 10.83 per cent. Moisture of 75:20:05 ratio pasta was non-significantly differ to 15 per cent but 10 per cent significantly differ. Crude protein was 12.85 to 11.84 per cent and non-significantly differ to 15 per cent but significantly differ to 10 per cent. Crude fat was 7.60 to 4.80 per cent and non-significantly differ ( $P \leq 0.05$ ) and significantly differ 85:10:05. Midha and Mogra (2007) reported crude fat of vermicelli 1.2 to 2.7 per cent which was lower in present study while working with MGS (Malted wheat flour: green gram dhal: spinach powder). The crude fat 1.60 to 3.48

**Table 1 : Proximate composition of wheat based pasta incorporated with linseed flour with 05 per cent spinach powder**

Treatments	Moisture %	Crude protein %	Crude fat %	Crude fibre %	Ash %	Carbohydrate %	Calcium mg/100g	Iron mg/100g
WF:LF:SP 75:20:05	8.79	12.85	7.60	7.80	2.80	60.16	138	11.00
WF:LF:SP 75:20:05	9.63	12.24	6.50	7.40	2.60	61.63	136.00	10.96
WF:LF:SP 75:20:05	10.83	11.84	4.80	6.80	2.20	63.53	135.00	10.76
C.D. (P=0.05)	0.525	0.654	1.340	1.287	0.625	11.58	5.209	0.576

**Table 2 : Organoleptic evaluation of wheat based pasta incorporated with linseed flour with 05 per cent spinach powder**

Treatments	Colour	Taste	Flavour	Texture	Over all acceptability
WF:LF:SP 75:20:5	5.90	5.00	5.90	6.50	5.70
WF:LF:SP 80:15:5	6.00	6	6.10	6.70	6.10
WF:LF:SP 85:10:5	6.00	6.00	6.40	6.00	6.20
C.D. (P=0.05)	0.310	0.344	0.300	0.318	0.213

of noodles was quite lower in present investigation revealed by Agarwal *et al.* (2004). Crude fibre was 7.80, 7.40 and 6.80. The result showed crude fibre of pasta was non-significantly differ to other ratio. Midha and Mogra (2007) reported crude fibre 2.2 to 2.4 per cent of vermicelli which was lower to present study. The crude fibre of pasta was quite lower to 9.2 per cent of noodles, revealed by Vaidya *et al.* (2008). Ash was 2.80, 2.00 and 2.20 per cent, respectively and 75:20:05 pasta was non-significant differ. Midha and Mogra (2007) reported ash was 2.9 to 5.8 per cent of vermicelli which was quite higher to present study. Carbohydrate of pasta was very quite different and non-significant differ with other ratio. Calcium was 138-134 mg per 100 g, respectively and non-significantly to other ratios. The results are lower with findings by Midha and Mogra (2007) and also lower findings by Kavitha *et al.* (2006). Iron of was 11 - 10.76 mg, respectively and non-significantly differ. The results are lower with findings by Midha and Mogra (2007).

#### Organoleptic evaluation:

Table 2 showed the score for colour was 5.90-6, respectively and significant differ. In present study of pasta of colour was lower to 8.9 reported by Kavitha *et al.* (2006). Taste was 5 to 6.00, respectively significantly differ ( $P \leq 0.05$ ) in comparison to other ratios. Midha and Mogra (2007) reported the taste 7.5 to 7.9 which was quite higher to present study. The flavour was 5.90 to 6.40. The result showed flavour of 75:20:05 pasta was non-significantly differ ( $P \leq 0.05$ ) with 85:10:05 pasta and significantly differ 85:15:05. The flavour of pasta was quite similar 8.8 reported by Kavitha *et al.* (2006). Agarwal *et al.* (2004) revealed the flavour 7.80 which was similar to present study. The score for texture of pasta was 6.50, 6.70 and 6.00, respectively. The result showed texture of pasta was significantly differ ( $P \leq 0.05$ ) in comparison to other ratios. The texture of pasta was similar to 8.8 reported by Kavitha *et al.* (2006). The score for over all acceptability of was 5.70, 6.10 and 6.20, respectively. Sensory score of pasta was significantly differ ( $P \leq 0.05$ ) in comparison to other ratios. Agarwal *et al.* (2004) revealed the overall acceptability 8.30 which was higher to present study.

#### Conclusion:

Pasta is popular breakfast cereal now in days and one bowl of pasta gives good source of energy, protein, iron and calcium to fulfill the requirement according to RDA. Wheat pasta with linseed flour combination gives fat in high quantity but in the form of poly unsaturated fatty acid. In our study gives better nutritional quality of pasta was prepared with the help of functional food. Wheat flour and spinach powder combination pasta was high in nutritional value. Wheat pasta of 10 per cent linseed flour with spinach powder was good consumer acceptability with good nutritional value and to solve the problem of malnutrition problem to school going children.

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