

STUDIES ON APPLICATION OF 5' NUCLEOTIDES IN MUTTON SOUP AND CHICKEN NOODLES AS FLAVOURING AGENTS

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INTRODUCTION

Flavour governs the acceptability of food products; therefore it is always an important issue for the people in food business (IFT 1986). Uniform and better quality in terms of flavour is achieved primarily by adding flavourings. Flavour enhancers fall under one category of flavorings, that do not have any flavour but when added to food products specially of animal origin, increase their overall palatability (Ogata 1976, Yamaguchi and Komata 1990). Mono Sodium Glutamate (MSG) is the most important among them. Other compounds with similar nature are Ibotenic acid, Tricholomic acid, Aspartic acid and 5' Nucleotides (5GMP, 5'IMP, 5'XMP) (Kuninaka 1960). It was also observed that when 5' Nucleotides were used with MSG, the combination showed synergistic effect (Duff 1981, Yamaguchi 1967). The present work was carried out to evaluate the response of indian palate to these flavour potentiators.

MATERIALS AND METHODS

Mono Sodium Glutamate and Guanine 5' monophosphate were obtained from Sisco Research Laboratories Ltd, Bombay and Sigma Chemical Co., St Louis, U.S.A. respectively.

Mutton Soup and Chicken Noodles were prepared as per the recipes in Table 1 and the flavour potentiators were incorporated into these products singly or in combination at levels shown in Table-2. The experiments were replicated thrice.

Preparation of Mutton Soup: Mutton, salt, onion, ginger, garlic and carrot were boiled in 2.2 litres of water till mutton was fully cooked. Then it was filtered and squeezed through muslin cloth to get the extract. Simultaneously corn starch slurry was prepared in a vessel. This slurry and the

extract were mixed and cooked for 5 minutes after adding pepper powder. It was divided into five parts and different levels of flavour enhancers were added.

Preparation of Chicken Noodles: Chicken meat was boiled with equal quantity of water for 30 minutes and then filtered to remove bones and meat. This meat extract was divided into five parts and flavour enhancers were added at different levels. Each part was used to prepare noodles separately.

Sensory evaluation was carried out by ranking method (Larmond-1977). The samples were evaluated for taste, flavour and aroma by a 10 to 20 members semi trained panel. The panelists were given coded samples and asked to rank them for the intensity of aroma, taste and flavour. The ranks given by each panelist were tabulated, added and analyzed for significant difference by using tables prepared by Kramer et al (1974).

RESULTS AND DISCUSSION

Data collected consisted of coded sample number, in the order of increasing concentration of attribute. Each sample was given ranks according to response of the panelist with respect of control. Ranks given to various samples of Mutton Soup and Chicken Noodles are shown in Tables 3 and 4 respectively along with the lower and higher insignificant rank sums as per the statistical chart for the rank totals (Kramer 1974).

The results (Table 3) indicated that there was a significant increase in flavour intensity of mutton soup at 0.06% and 0.1% level of MSG incorporation while MSG and 5'GMP combined gave a similar increase in flavour intensity at a combination level of 0.01% + 0.01% respectively.

The data for Chicken Noodles (Table 4)

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showed a significant increase in flavour intensity at 0.15% incorporation of MSG alone and at 0.1% when in combination with 0.1% 5'GMP.

The study showed that the response of Indian consumers to flavour potentiators was positive and significant. The group of panelists observed a linear relationship between concentration of flavour potentiators and flavour intensity. There was a significant increase in flavour intensity in mutton soup at levels of 0.06% MSG alone and 0.01%MSG in combination with 0.01% 5'GMP while for chicken noodles 0.15% MSG alone and 0.1% MSG in combination with 0.01% 5'GMP gave similar increases in flavour intensity. Though the MSG alone in the aforementioned levels gave good results, it cannot be recommended for use in mutton soup/ chicken noodles since it is above the permissible limits. However combination of MSG and 5'GMP can be successfully used in mutton soups. Thus, results indicated that in

soup and noodle type products, the flavour enhancers are required at levels higher than those permitted for pure meat products, when used alone.

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Table 1
Recipes of Mutton Soup and Chicken Noodles

Mutton Soup		Chicken Noodles	
Mutton	200g	Commercial Noodle	100g
Corn Starch	80g	Chicken	50g
Salt	40g	Salt	3g
Pepper Powder	10g		
Onion	5g		
Garlic	5g		
Ginger	5g		
Carrot	10g		

Table 2
Level of Flavour Potentiator incorporated into samples

Mutton Soup			Chicken Noodles		
Sample Code	MSG	MSG+5'GMP	Sample Code	MSG	MSG+5'GMP
CC	0%	0%+0%	CC	0%	0%+0%
A	0.02%	0.01%+0.002%	A	0.05%	0.1%+0.01%
B	0.04%	0.01%+0.004%	B	0.10%	0.1%+0.05%
C	0.06%	0.01%+0.006%	C	0.15%	0.1%+0.10%
D	0.10%	0.01%+0.010%			

Table 3
Sensory data for Mutton Soup

	MSG	Combination of MSG & 5'GMP
Number of treatments	2	2
" panelists	11	10
Rank sums for various samples		
A	14	14
B	14	12
C	12*	12
D	11*	10*
Lower insignificant rank sums	13	11
Higher " " "	20	19
(*P < 0.05)		

Table 4
Sensory data for Chicken Noodles

	MSG	Combination of MSG & 5'GMP
Number of treatments	2	2
" panelists	11	12
Rank sums for various samples		
A	16	18
B	14	15
C	12*	13*
Lower insignificant rank sums	13	14
Higher " " "	20	22
(*P < 0.05)		