E2-13: Preliminary studies on wheat/rice pasta products

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Trials were carried out to estimate the maximum level of incorporation of rice flour in wheat pasta products using cold extrusion technique in an Italian PAMA - ROSA pasta making machine. Both thin long strands commonly called "noodles" and "shell" shape short pasta were prepared using the following compositions;

(a) 100% wheat
(b) 25% rice/75% wheat
(c) 50% rice/50% wheat
(d) 75% rice/25% wheat
(e) 100% rice
(f) 100% rice (10% pregelatinized rice flour included).

The effect of a monoglyceride which is known to form starch complexes was tried out for 50% and 75% substitution. The following parameters were measured: optimum cooking time, water absorption capacity, solid content in gruel and sensory characteristics such as elasticity, stickiness, firmness etc.

The production of good quality pasta was technically possible upto 50% substitution of rice in wheat flour. The above quality tests did not show much variation upto this level. Optimum cooking time was 9 - 10 min for short pasta and 3 min. 20 sec. for thin strands. The sensory properties were not objectionable as tested by a trained panel. Swelling power or water absorption capacity increased with the incorporation rate of rice flour. Cooking losses were lower for thin strands than for shells due to shorter cooking time. Losses increased with rice flour incorporation but remained below 9% which was acceptable, but in the case of 75% rice incorporation losses were twice as much as compared with 100% wheat. The addition of 1% monoglyceride did not show the expected improvement in solid content in gruel or sensory properties. Incorporation of 10% pregelatinzed rice flour in the all rice formula gave satisfactory results. Pregelatinized rice flour was obtained by HTST Extrusion cooking at low T and low P. In this experiment, solid content in gruel reduced remarkably upto about 2.3, which is comparable with a commercial rice noodle. The elasticity and texture of cooked pasta were also comparable with those of commercial rice pasta.