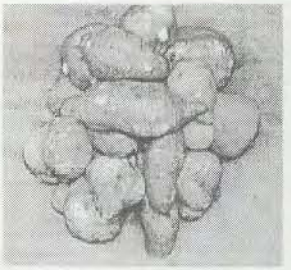
Preparation of noodles from Sweet Potato starch



Ipomoea batatas **(Linn.) Lam.**

Sweet Potato, ***Ipomoea batatas* (Linn.) Lam.** is grown commonly as a root crop in tropical countries including China and Japan. The root starch is employed for many purposes but not for making noodles. Modification of its properties may make it suitable to produce noodles.

Philippines scientists worked on Heat-moisture treatment to Sweet Potato starch, which was used as a substrate and composite with maize starch to produce *bihon*-type starch noodles. In Philippines *bihon* noodles are prepared from rice flour, maize starch and mung beans starch and have demonstrated hypoglycaemic activity in diabetic patients.

Heat-moisture treatment refers to the exposure of the starch to higher temperatures normally above the gelatinization temperature (80 to 120°C) at very restricted moisture content (<35%). During the experiment tubers were washed thoroughly, macerated using a mechanized grater, diluted 1:1 w/v with tap water filtered through cheese cloth. The residue was resuspended in tap water (1:05 w/v), filtered again (2x) and allowed to pass through a 250-mesh sieve. Starch in the filterate was allowed to settle for 3 to 4 hour at room temperature (27 to 30°C). Discarding the supernatant, starch was kept at 7°C to settle and dried in oven at 50°C overnight cooled to room temperature and equilibrated for 4 hours before packing in polyethylene bags. For heat-moisture treatment of obtained starch it was adjusted from 27 to 30% moisture and equilibrated at 4 to 5°C overnight (refrigerated condition) and placed in a covered baking pan for 3 hours at 110°C. The sample were cooled to room temperature and dried at 50°C, equilibrated for 4 hours and sealed in polyethylene bags until use. For preparation of starch noodles, starch dough was prepared by partial gelatinization of 5% (w/w) of the total starch to be used which serves as binder. The starch dough was kneaded and extruded into boiling water for 2-3 minute. *Bihon*-type noodles were made from Sweet Potato starch, maize starch, heat-moisture treated Sweet-Potato starch and composite 50% heat-moisture treated Sweet Potato starch + 50% maize starch.

Preliminary quality scoring showed that there is not much difference in these noodles from the commercial ones. However, consumer testing is to be done before commercialization of *bihon*-type Sweet Potato starch noodles (Collado *et al, J Food Sci,* 2001, **66**, 604-609).

Milk protein coatings prevent apple and potato browning

Food flavour and colour are the two major factors which enhance their acceptability. Browning of food products has always remained a problem for the food industry. Health concerns have limited the use of sulfites to reduce both enzymatic and nonenzymatic oxidative browning. Other techniques like modified atmosphere packaging, vacuum packaging and the use of anti-browning agents based on citric acid or ascorbic acid also have various limitations mainly alteration in food flavour, odour and texture.

The use of milk protein-based coatings which are flavourless, odourless and edible have been found useful for controlling enzymatic browning of cut fruits and vegetables without causing tissue damage. Le Tien and others studied colour measurements on sliced apples and potatoes coated with milk protein formulation in order to determine effectiveness in postponing enzymatic browning. Using the N, N-diethyl-*p*-phenylene-diamine, antioxidant properties of films cast from whey and calcium caseinate solutions were tested during the experiment.

Coating solution was prepared with 5% protein (calcium caseinate or whey protein powder), 2.5% glycerol, 0.25% carboxy-methyl cellulose (CMC) and 0.125% $CaCl_2$. The components were mixed in distilled water to obtain homogenous solution and heated at 80°C for 30 min. The solution was cooled at room temperature (20±1°C) and the final pH was 6.5. Solution was prepared immediately before use. Slices of potatoes and apples were dipped and held for 1 minute in the coating solution and laid on a flat surface for drying at room temperature.

Results confirmed that the formulation is effective in delaying browning reactions by acting as oxygen barriers. The use of milk proteins as natural antioxidants could be a helpful tool for food industries (Le Tien, *J Food Sci*, 2001, **66**, 512-516).