FOOD (incl. Dairy, Fishery, Poultry and other Plant and Animal products)

NPARR 2(3), 2011-0291, Tenderizing effect of blade tenderizer and pomegranate fruit products in goat meat

Toughness of goat meat is a major problem with regard to consumer acceptance. Keeping this in view a blade tenderizer was developed for tenderization of goat meat. Pomegranate fruit products were also explored for tenderization effect on goat meat. Tenderization of goat meat with pomegranate seed powder improved the textural properties marginally with slight adverse colour change and taste. Samples treated with PRP got lower score for colour in sensory evaluation and there was adverse effect on taste of treated meat. Blade tenderization and 4% PSP proved better for tenderization and were compared with control and 0.2% papain in goat meat chunks. The cooked samples treated with papain and blade incisions got better sensory scores and required lesser shear force compared to 4% PSP and control. Overall the papain treated meat was superior in terms sensory attributes followed by blade incision and PSP. The results suggested that the blade incisions can be used for tenderization of goat meat. Pomegranate seed powder maybe considered for mixing with other spices to marinate goat meat mainly for its beneficial effects [Narsaiah, K*, Jha, S.N., Devatkal, S.K., Borah, A., Singh, D.B., Sahoo, J. (Central Institute of Post-Harvest Engineering and Technology, Ludhiana 141004, India), Journal of Food Science and Technology 2011, 48(1), 61-68]

NPARR 2(3), 2011-0292, Functional and physicochemical properties of whole egg powder: Effect of spray drying conditions

Pasteurized liquid whole egg was subjected to spray drying to determine the effect of spray drying conditions on moisture content, water activity, peroxide value, emulsion stability, gel texture, foaming stability and colour change of the powder products. Drying process was carried out in a pilot scale spray dryer (Mobile Minor Niro-Atomizer, Denmark). The inlet (165-195 °C) and outlet air temperatures (60-80 °C) and the atomization pressure (196-392 kPa) were investigated as spray drying process variables. Perturbation and 3-D graphs revealed that outlet air temperature and atomization pressure had more effect than inlet air temperature, on the properties of whole egg powder. Optimum spray drying conditions of whole egg powder were determined according to the specific endproduct requirements (bakery foods, omelette and mayonnaise and salad dressing) targeting to obtain the desired value of functional properties, i.e.; emulsion stability, gel texture, foaming stability and colour change [Koç M., Koç, B., Susyal, G., Yilmazer, M.S., Ertekin, F.K*, Badatiolu, N. (Faculty of Engineering, Department of Food Engineering, Ege University, 35100 Bornova, Izmir, Turkey), Journal of Food Science and Technology, 2011, 48(2), 141-149]

NPARR 2(3), 2011-0293, Effect of germination and probiotic fermentation on nutrient profile of pearl millet based food blends

Probiotic fermented foods are fast being recognized as health foods. Most of such foods are based on dairy products but little research work is available on coarse cereals and millets, which constitute the staple foods in developing countries. This paper aims to determine the effect of germination and fermentation on nutrient composition of pearl millet based food blends. Design/methodology/approach: Indigenously developed pearl millet based food blends containing raw and germinated pearl millet flour, whey powder and tomato pulp (2:1:1w/w) were autoclaved, cooled and fermented with 5 percent Lactobacillus acidophilus curd which supplied $10^6$ cells/ml to the slurry at 37°C for 12 h. The unfermented blends, after autoclaving, served as controls. The developed food blends were subjected to nutritional evaluation by using the standard methods of analysis. The data were statistically analysed. Findings: Pearl millet based, germinated, autoclaved and fermented, food blend maintained adequate cell viability (8.64 cfu g$^{-1}$) as compared to non-germinated food blend. Germination and probiotic fermentation caused significant improvement in the contents of thiamine, niacin, total lysine, protein fractions, sugars, soluble dietary fibre and in vitro availability of Ca, Fe and Zn of food blends. Practical implications: Research is currently aimed at developing probiotic millet based food mixture, which had enhanced nutrient profile. Hence, it can be considered for commercialization after
establishing its health/therapeutic implications among the population. Originality/value: Dairy foods have preferentially been used as the carrier medium for probiotics. This paper explores the possibility of using staple foods as the carrier medium. The consumption of such food mixtures containing viable probiotic bacteria should be enhanced among consumers in term of their role in health maintenance and disease prevention [Arora, S. *, Jood, S. and Khetarpaul, N. (Department of Foods and Nutrition, CCS Haryana Agricultural University, Hisar, India), British Food Journal, 2011, 113(4), 470-481].

**NPARR 2(3), 2011-0294, Effect of differently treated wheat bran on rheology, microstructure and quality characteristics of soft dough biscuits**

The effect of the addition of 30% of differently treated wheat brans and the blends prepared with wheat flour, i.e., raw bran, roasted bran, steamed and roasted bran and microwave treated bran on the rheological and quality characteristics of the soft dough biscuits was studied. The dough stability increased, mixing tolerance index values decreased, extensograph resistance to extension increased, extensibility and area values showed a decrease, cohesiveness, springiness and adhesiveness of high-fiber biscuit dough decreased with addition of wheat bran. Biscuits made with WF-RSB and glycerol monostearate (GMS) had the highest overall quality score of 43.5 as against 47 for control out of 50. Total dietary fiber content of these biscuits (WF-RSB+GMS) was 3.25 times more than the control biscuits. The scanning electron microscopic studies on the crumb of high-fiber biscuits showed bran particles adhering to starch granules and protein fibrils. The bakery industry is the largest of the processed food industries in India. Bread and biscuits account for over 85% of the bakery products produced in the country. The soft dough biscuits, being affordable, happen to be the most widely consumed of all the biscuit varieties in the country. There is an increase in the awareness on the beneficial effects of high fiber consumption. Soft dough biscuits can be an effective carrier of fiber and can be consumed by a large segment of the population. The data generated on the use of wheat bran and the use of additives to improve the biscuit dough characteristics to get a high-fiber biscuit of satisfactory quality would benefit the biscuit industry [Nandeesh, K., Jyotsna, R., Venkateswara Rao, G. (Flour Milling, Baking and Confectionery Technology Department, Central Food Technological Research Institute, Mysore - 570 020, Karnataka, India), Journal of Food Processing and Preservation 2011, 35(2), 179-200].

**NPARR 2(3), 2011-0295, Optimization of Rabadi-like fermented milk beverage using pearl millet**

Rabadi, prepared by fermenting pearl millet (*Pennisetum typhoides*um L.) (PM) flour with butter milk, is a traditional popular beverage of North-Western states of India. A process for PM based Rabadi-like fermented milk beverage was attempted. Skim milk and flour of 24 h germinated PM grains (FGG-24 h) were used as sources of solids. FGG-24 h was mixed in skim milk before fermentation and level of flour and water were determined using Response Surface Methodology (RSM) with central composite rotatable design (CCRD). The product developed using 5.3% flour and 72%water on the basis of curd gave the most acceptable product. For further stabilization during storage, pectin and/or carboxy methyl cellulose were tried at different levels and a level of 0.6% pectin was selected. The standardized product was packaged in glass bottles and stored under refrigeration (5-7 °C). The shelf-life of the product was 7 days [Modha, H.* and Pal, D. (Dairy Technology Department, SMC College of Dairy Science, Anand Agricultural University, Anand 388110, India) Journal of Food Science and Technology, 2011, 48(2), 190-196].