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

**NPARR 4(1), 2013-032 Effect of extrusion conditions on physicochemical and sensorial properties of corn-broad beans (Vicia faba) spaghetti type pasta**

Corn-broad bean spaghetti type pasta was made with a corn/broad bean flour blend in a 70:30 ratio, through an extrusion-cooking process (Brabender 10 DN single-screw extruder with a 3:1 compression ratio). The effect of temperature (T = 80, 90 and 100 °C) and moisture (M = 28%, 31% and 34%) on the extrusion responses (specific consumption of mechanical energy and pressure) and the quality of this pasta-like product (expansion, cooking-related losses, water absorption, firmness and stickiness) was assessed. The structural changes of starch were studied by means of DSC and XRD. The extrusion-cooking process, at M = 28% and T = 100 °C, is appropriate to obtain corn-broad bean spaghetti-type pasta with high protein and dietary fibre content and adequate quality. The cooking characteristics and resistance to overcooking depended on the degree of gelatinisation and formation of amylose-lipid complexes. The critical gelatinisation point was 46.55%; beyond that point, the quality of the product declines [Giménez M.A.*, González, R.J., Wagner, J., Torres, R., Lobo, M.O. and Samman, N.C.(Departamento de Agroindustrias, Facultad de Ingeniería, Universidad Nacional de Jujuy, Avenida Italia esq., Martiarena, 4600 Jujuy, Argentina), *Food Chemistry*, 2013, **136**(2), 538-545].

**NPARR 4(1), 2013-033 Functional components of grape pomace: Their composition, biological properties and potential applications (Review)**

The roles of functional foods on human health have been realised by more and more researchers, food producers and consumers. Functional food ingredients from both plant and animal sources such as dietary fibre, soy protein isolate, whey protein isolate and omega 3 fatty acid have been widely used in functional food product development. Many fruit processing by-products such as grape, apple and orange peels are rich in bioactive phytochemicals, dietary fibre and unsaturated fatty acids, hence have potential to serve as functional food ingredients. In this review, we summarise recent advancement of research in grape pomace (GP), the residual of grapes after wine making. The polyphenol profile of GP and their biological, antioxidant and antimicrobial activities, the stability of GP polyphenols in food system, the interaction between GP polyphenol and other food ingredients, as well as the functionalities of grape seed oil and GP fibre are covered [Yu, J. and Ahmedna, M. (Department of Family and Consumer Sciences, North Carolina A and T State University, 1601 East Market Street, Greensboro, NC 27411, United States), *International Journal of Food Science and Technology*, 2013, **48**(2), 221-237].

**NPARR 4(1), 2013-034 Kinetics of ascorbic acid degradation in fruit-based infant foods during storage**

The kinetics of ascorbic acid (AA) degradation in a fruit-based beikost product added with AA were determined after storage at 4, 25, 37 and 50°C during 4, 8, 12, 16 and 32 weeks in plastic polypropylene/ethylene-vinyl alcohol vacuum packaging. It was confirmed that AA degradation followed an Arrhenius first-order kinetics, with an activation energy of 20.11 ± 0.33 kcal mol\(^{-1}\). No AA losses at 4°C were recorded during the entire storage period. In contrast, a time- and temperature-dependent decrease (p < 0.05) in AA was observed at the other tested temperatures-the degradation rate decreasing from 50°C to 25°C, as expected. AA percentage retention at the end of storage ranged between 6.4% (50°C/16 weeks) and 100.9% (4°C/32 weeks) [Bosch, V.*, Cilla, A., García-Llatas, G., Gilabert, V., Boix, R. and...

NPARR 4(1), 2013-035 Experimental measurement of physical pressure in foods during frying

Two important factors affecting the oil uptake in foods during deep fat frying are water content and pressure development. In the past frying studies, the physical pressure has not been measured experimentally but was calculated using computer models, which has resulted in disagreements about its magnitude. The present study tries to explain the complex mass transfer mechanisms taking place during deep fat frying with respect to real time pressure variations inside potato discs and chicken nuggets. Frying experiments were performed at two temperatures of 175 °C and 190 °C for 200 and 240 s for potato discs and chicken nuggets, respectively. The gage pressure increased rapidly above the atmospheric pressure immediately after the samples were introduced into the hot oil. The rise in pressure was greater in potato discs with greater initial moisture content. This was expected due to sudden moisture flash-off. As frying progressed, the temperature inside the samples increased whereas the gage pressure started decreasing and became negative. The onset of negative pressure was observed during initial stages of frying for chicken nuggets, but in the middle of frying for potato discs. The negative pressure values before the product is taken outside the fryer may cause increased oil uptake during frying itself. During the post frying cooling, the pressure further decreased and reached negative values. The negative pressure is expected to have caused rapid absorption of surface oil during both frying and cooling stages [Sandhu, J., Bansal, H. and Takhar, P.S. (Department of Food Science and Human Nutrition, University of Illinois, Urbana-Champaign, IL 61801, United States), Journal of Food Engineering, 2013, 115(2), 272-277].