The oil content and fatty acid composition of seed of 233 genebank accessions (total) of nine Capsicum species, and a single accession of Tubocapsicum anomalum, were determined. The physicochemical characteristics of oil extracted from seed of Capsicum annuum and Capsicum baccatum were also examined. Significant differences among mean values for seed oil content were detected among the cultivated Capsicum species. Oil content in seed of C. annuum var. annuum was significantly greater than that in seed of other cultivated species. Capsicum pubescens had the lowest average seed oil content. Among the non-cultivated taxa examined, seed of Capsicum galapagoense had the lowest oil content and T. anomalum the highest. Averages across the 5 cultivated taxa for the 4 principal fatty acids were 12.9%, 3.4%, 6.7% and 76.0% for C16:0 (palmitic), C18:0 (stearic), C18:1 (oleic) and C18:2 (linoleic), respectively. Linoleic acid was the principal fatty acid in all samples, with a high value of 81% in Capsicum chinense. Capsicum frutescens had the lowest percentage of total unsaturated fatty acids and T. anomalum the highest. In general, the oil content and fatty acid composition of seed of the wild taxa were similar to those of the cultivated species [Robert L. Jarreta*, Irvin J. Levyb, Thomas L. Potterc and Steven C. Cermakd (USDA/ARS/PGRU, 1109 Experiment Street, Griffin, GA 30224, United States), Journal of Food Composition and Analysis, 2013, 30(2), 102–108].

In this study, adulteration of butter with margarine was analysed using Raman spectroscopy combined with chemometric methods (principal component analysis (PCA), principal component regression (PCR), partial least squares (PLS)) and artificial neural networks (ANNs). Different butter and margarine samples were mixed at various concentrations ranging from 0 % to 100 % w/w. PCA analysis was applied for the classification of butters, margarines and mixtures. PCR, PLS and ANN were used for the detection of adulteration ratios of butter. Models were created using a calibration data set and developed models were evaluated using a validation data set. The co-efficient of determination ($R^2$) values between actual and predicted values obtained for PCR, PLS and ANN for the validation data set were 0.968, 0.987 and
In conclusion, a combination of Raman spectroscopy with chemometrics and ANN methods can be applied for testing butter adulteration [Reyhan Selin Uysala, Ismail Hakki Boyaci*, Hüseyin Efe Genisa and Ugur Tamerc (Department of Food Engineering, Faculty of Engineering, Hacettepe University, Beytepe, 06800 Ankara, Turkey), *Food Chemistry, 2013, 141(4), 4397–4403].

NPARR 5(2), 2014-0154 A comparison of pure and natural antioxidant modified rapeseed oil storage properties

Environmentally friendly lubricants are desirable in many applications in which water or soil pollution is expected. The use of natural additives can enhance the renewability of environmentally friendly lubricants and makes them more attractive for users. The main purpose of this study was to investigate sage and thyme extracts as natural antioxidants in rapeseed oil. Their efficiency was investigated under accelerated oxidation and storage conditions and was estimated according to induction period, peroxide and acid number variation, kinematic viscosity and viscosity index changes, and tribological and corrosion properties. The observed results show that sage and thyme extracts have good oxidation stabilisation properties; therefore, the modification of rapeseed oil with these extracts can improve the oxidation stability of rapeseed oil both in storage and in use [Raimondas Kreivaitis*, Milda Gumbytė, Kiril Kazancev, Juozas Padgurskas and Violeta Makarevičienė (Aleksandras Stulginskis University, Studentu 15, LT-53362 Akademija, Kaunas Distr., Lithuania), Industrial Crops and Products, 2013, 43, 511-516].

NPARR 5(2), 2014-0155 Diversity in oil content and fatty acid profile in seeds of wild cassava germplasm

Cassava (*Manihot esculenta*) is the only commercial species of the *Manihot* genus, cultivated for its starchy tuber roots. However, cassava seeds are known to be rich in oils and fats, there are scant reports on the content and properties of oil from cassava seeds and its wild relatives. Wild *Manihot* species usually produce a higher number of seeds with a large diversity in shape and weight. Seeds of 106 accessions belonging to 12 species of *Manihot* from the collection of Embrapa Cassava and Fruits were evaluated for oil content by NMR and fatty acids composition by gas chromatography. The oil content ranged from 17.2% (*M. caerulescens*) to 30.7% (*M. flabellifolia*) and the species clustered into eight different groups based on the oil content. Five fatty acids were found in all species with the average content of the fatty acids being: linoleic (C18:2) 61.5%; oleic (C18:1) 20.0%; palmitic (C16:0) 12.3%; stearic (C18:0) 4.5%; and linolenic (C18:3) 1.7%. The content of fatty acids varied significantly between species as well as between accessions within a species. The highest content of linoleic acid was in seeds of *M. peruviana*, *M. pseudoglaziovii*, *M. cecropiaefolia*, *M. flabellifolia*, *M. glaziovii* and *M. carthaginensis* (average of 65%); and the highest level of oleic acid was in *M. caerulescens*, *M. esculenta*, *M. anomalala*, *M. dichotoma* and *M. tomentosa* (average of 23 %). The collection of Embrapa's *Manihot* germplasm is a valuable source for cassava breeding programs, containing a large variability in seed size, oil content and fatty acid composition. The oil from seeds of wild *Manihot* species may be equally valuable for industrial uses as oil from seeds of other Euphorbiaceae species [Alfredo Augusto Cunha Alves, Linda Manthey Terry Isbell David Ellis and Maria M. Jenderek* (USDA-ARS, National Center for Genetic Resources Preservation, Fort Collins, CO 8052, USA), Industrial Crops and Products, 2014, 60, 310–315].

NPARR 5(2), 2014-0156 Total antioxidant activity of selected vegetable oils and their influence on total antioxidant values in vivo: A photochemiluminescence based analysis

This study evaluated the antioxidant activity of vegetable oils using photochemilu-
minescence based assay. The following oils were selected for the study – palm oil (PO); olive oil (OLO); sunflower oil (SNO); rice bran oil (RBO); sesame oil (SES0) and linseed oil (LSO). The antioxidant activity of oils was reduced significantly when unsaponifiable matter was removed from the oils. The rats fed unsaponifiable matter removed vegetable oils showed significantly reduced antioxidant activity but no change in overall fatty acid composition in serum lipids. Therefore the minor constituents in unsaponifiable matter influences antioxidant activity exhibited by vegetable oils [Sugasini Dhavamani, Yalagala Poorna Chandra Rao and Belur R. Lokesh* (Department of Lipid Science and Traditional Foods, CSIR – Central Food Technological Research Institute, Mysore 570 020, Karnataka, India), Food Chemistry, 2014, 164, 551–555].

NPARR 5(2), 2014-0157 Extraction of cocoa butter alternative from kokum (Garcinia indica) kernel by three phase partitioning

Kokum kernel is a byproduct of agro-processing industry in India containing about 40–50% fat which has the potential as a worthy cocoa butter alternative (CBA). However, inefficient extraction techniques that are practiced at cottage level restrict its industrial applications. This work reports on the optimization of the technique of three phase partitioning (TPP) for efficient extraction of kokum kernel fat. The parameters of TPP were optimized with respect to ammonium sulphate concentration, ratio of slurry to t-butanol and pH of slurry. The optimized protocol resulted in maximum recovery of 95% (w/w) fat recovery within 2 h. The technique is economical and eco-friendly, and is promising for utilization of agro-processing waste in India to a product of commercial significance [Ganesh S. Vidhate and Rekha S. Singhal* (Food Engineering and Technology Department, Institute of Chemical Technology, Matunga, Mumbai 400 019, India), Journal of Food Engineering, 2013, 117(4), 464–466].