SPICES/CONDIMENTS

NPARR 5(4), 2014-0365 Topical Nigella Sativa for nasal symptoms in elderly

The effects of intranasal application of black seed (Nigella Sativa) oil (NSO) and isotonic sodium chloride solution (ISCS) on nasal symptoms of the elderly were compared. In this prospective, crossover randomized controlled trial, 42 geriatric patients with nasal dryness and related symptoms were randomized to receive either 2 weeks of isotonic sodium chloride solution (ISCS) followed by 2 weeks of N. sativa oil (NG oil) or the same treatment in the opposite order. There was a washout period of 3 weeks in between the treatment periods. Subjective symptoms including nasal dryness, burning, obstruction, itching and crusting were evaluated by a visual analog scale. Mucociliary function was evaluated with saccharin test.

Nasal dryness, obstruction and crusting improved significantly with the use of NSO compared to ISCS without any evidence of relevant carryover effects (p < 0.05 for all for the difference in treatment). There was no significant difference between the effect of NSO and ISCS on nasal burning and itching (p> 0.05 for all). There was no change in mucociliary clearance during any of the treatment periods. NSO is a better alternative to ISCS to treat nasal mucosa symptoms due to aging [Cagatay Oysu, Ahmet Tosun, Huseyin Baki Yilmaz, Asli Sahin-Yilmaz*, Deniz Korkmaz and Ahmet Karaaslan (Umraniye Education and Research Hospital, Department of Otolaryngology, Istanbul, Turkey), Auris Nasus Larynx, 2014, 41(3), 269–272].

NPARR 5(4), 2014-0366 Nutritional and sensory quality during refrigerated storage of fresh-cut mints (Mentha × piperita and M. spicata)

The effect of storage time on quality attributes of refrigerated fresh-cut mints (Mentha × piperita and M. spicata) was studied. Atmosphere composition, respiratory activity, weight loss, surface colour, total chlorophyll, carotenoids, browning potential, total phenols, flavonoids, radical-scavenging activity, ascorbic acid and essential oil yield and composition were analysed. Respiratory activity of peppermint and spearmint samples diminished moderately (42% and 28%, respectively) after 21 days at 0°C. A slight modification of the internal atmosphere was achieved. Surface colour, chlorophyll, carotenoid and antioxidant compounds remained almost constant. The yield of essential oil did not change or it showed an apparent increase after 21 days at 0°C, depending on plant growth stage. The characteristic flavour components of peppermint (menthone and menthol) increased, while the contents of the main constituents of spearmint essential oil showed minor variations after storage. The conditions assayed for packaging and storing fresh-cut mints were adequate to achieve a relatively long shelf life and they retained their antioxidant properties [Ana Curutchet, Eduardo Dellacassa, Jorge A. Ringuete, Alicia R. Chaves and Sonia Z. Viña*(Curso Bioquímica y Fitoquímica, Facultad de Ciencias Agrarias y Forestales (FCAyF) UNLP, La Plata, Buenos Aires, Argentina), Food Chemistry, 2014, 143, 231–238].

NPARR 5(4), 2014-0367 Recent study of turmeric in combination with garlic as antidiabetic agent

The aim of this study was to compare efficacy and safety of Allium, Curcuma with glibenclamide in type-2 diabetes mellitus with or without dyslipidemia. Thirty five patients were recruited and randomized into 2 groups for 14 weeks treatment and assessment. One group received study drug, three times two capsules containing 200 mg turmeric and 200 mg allium extract per day. The other group received 1 capsule of 5 mg glibenclamide as standard drug per day. After 14 weeks of treatment patients with allium curcuma treatment showed significant
decreased in fasting blood glucose (192.76 versus 141.71 mg/dL) and 2 hours post-prandial blood glucose (295.35 versus 204.35 mg/dL). HbA1C level was also significantly decreased (10.41 versus 8.09). No difference was found in blood pressure, hematology profile, liver and kidney function of both groups. In conclusion, allium curcuma has potential to be used as antidiabetic agent [Elin Yulinah Sukandar, Primal Sudjana, I. Ketut Adnyana, Ame Suciati Setiawan and Umi Yuniarni, Procedia Chemistry, 2014, 13, 44–56].

**NPARR 5(4), 2014-0368** Fungal and aflatoxin contamination of marketed spices

Fourteen spice samples were collected from local markets in Doha, Qatar, during 2012, and were surveyed for the presence of potentially harmful mycoflora and for contamination with aflatoxins B1, B2, G1, and G2 by high-performance liquid chromatography (HPLC). Among the tested spice samples, chili powder showed the highest presence of fungal propagules, while ginger, curry and garlic samples did not present any fungal contamination. A total of 120 isolates, mostly belonging to *Aspergillus* and *Penicillium* genera, were collected and 33 representative species were identified by amplification and sequencing of the internal transcribed spacer (ITS) region. *Aspergillus flavus*, *Aspergillus nomius* and *Aspergillus niger* were the most dominant. Thirty-seven *Aspergillus* strains were screened for their potential to produce aflatoxins using biochemical and molecular tools: only *A. flavus* strains showed both fluorescence and amplification with all the three primers targeting aflP, aflM and aflR genes. Aflatoxins were detected in five spices (black pepper, chili, tandoori masala, turmeric and garam masala), and with the exception of garam masala, the tested samples of turmeric, black pepper, tandoori masala and chili powder exceeded B1 and/or total aflatoxin maximum levels. Our results demonstrate the potential for mycotoxin biosynthesis by fungi contaminating imported spice products [Walid Hammami, Stefano Fiori, Roda Al Thani, Najet Ali Kali, Virgilio Balmas, Quirico Migheli* and Samir Jaoua (Dipartimento di Agraria, Università degli Studi di Sassari, Viale Italia 39, I-07100 Sassari, Italy), Food Control, 2014, 37, 177–181].

**NPARR 5(4), 2014-0369** The effect of plant regulators on the concentration of carotenoids and phenolic compounds in foliage of coriander

Foliage of coriander crop is a rich source of pro-vitamin-A carotenoids and phenolics of relevance to human health. Foliar-application of plant growth regulators—methyl jasmonate and salicylic acid, differentially elicited total carotenoids, β-carotene, lutein, chlorophylls, total phenolics and chlorogenic acid in coriander, GS4 Multicut and Mahak, the cultivars with high and low carotenoids respectively. Carotenoids and total phenolics increased 6.8 and 3 folds respectively when treated with methyl jasmonate (10 µmol/L), whereas salicylic acid (500 µmol/L) showed 5.4 and 3.5 folds of respective compounds. These treatments also enhanced levels of β-carotene, lutein, chlorophylls and chlorogenic acid, as observed by HPLC/MS analyses. Carotenoid and phenolic extracts of the best treatments showed significant increase in hydroxyl and superoxide radical scavenging antioxidant activities compared with controls. The observations made here indicate that the precise use of plant growth regulators is a simple method for naturally augmenting the nutritionally important compounds in coriander crop [Peethambaran Divya, Bijesh Puthusseri and Bhagyalakshmi Neelwarne* (Plant Cell Biotechnology Department, CSIR–Central Food Technological Research Institute†, Mysore 570020, India), LWT-Food Science and Technology, 2014, 56(1), 101–110].

**NPARR 5(4), 2014-0370** Method for obtaining three products with different properties from fennel (*Foeniculum vulgare*) seed

The objectives of this study were to determine the effects of distillation time (DT; 15–
1080 min) on yield, composition, and antioxidant capacity of fennel (Foeniculum vulgare) seed essential oil (EO) as well as on the yield, composition, and properties of lipids extracted from steam-distilled fennel seeds (15–600 min). EO yield increased with increasing DT to a maximum of 1.375% at 1080 min. The principal constituent was estragole, comprising 82–91% of the overall content. Other species included limonene, fenchone, and anethole. Antioxidant capacity of the EO was essentially unaffected by DT, with capacities ranging from 11.2 to 20.6 µmol Trolox/g. The yield of lipids extracted from steam distilled fennel seeds was unaffected by DT and ranged from 21.7 to 22.8 mass%. The fatty acid composition was also unaffected by DT, and the major constituents were petroselenic (67.0–71.3%) and oleic (12.0–16.4%) acids. The concentrations of tocopherols, tocotrienols, and phytosterols were unaffected by DT whereas unsaponifiables and EO content in lipids decreased with increasing DT. Acid value, kinematic viscosity, peroxide value, and pour point increased with increasing DT, whereas density decreased. Induction period, heteroatom content, and Gardner color were unaffected by DT. As DT increased, in vitro degradability of defatted, steam-distilled fennel seeds decreased. In summary, longer DT negatively impacted feed quality of steam-distilled, defatted seed meal and lipid quality but did not significantly affect EO composition and antioxidant capacity [Bryan R. Moser*, Valtcho D. Zheljazkov, Erica L. Bakota, Roque L. Evangelista, Archana Gawde, Charles L. Cantrell, Jill K. Winkler-Moser, Alexander N. Hristov, Tess Astatkie and Ekaterina Jeliazkova (United States Department of Agriculture, Agricultural Research Service, National Center for Agricultural Utilization Research, 1815 N. University Street, Peoria, IL 61604, USA), Industrial Crops and Products, 2014, 60, 335–342].