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POSTER 65

NON-ANTHOCYANIN POLYPHENOLS QUANTIFICATION IN *EUTERPE OLERACEA* FRUITS BY A UHPLC−LTQ-ORBITRAP MS METHOD

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High antioxidant and anti-inflammatory activities have been observed from non-anthocyanin polyphenols of *E. oleracea* fruits[1-2]. The aim of this work was to quantify major non-anthocyanin polyphenols by an accurate UHPLC−LTQ-Orbitrap MS method. Fruits were harvested in Pará state (Brazil), processed to pulp and lyophilised. 0.5g of dry pulp powder was defatted by sonication with petroleum ether. The residue was then extracted five times with 5mL MeOH each time for 30 min (optimized conditions giving recovery rates > 90%). The extract was evaporated to dryness with a RapidVap® evaporator at 35°C. Solubilization of the dried extract was realised using 40% MeOH. For the UHPLC quantification, a HSS C18 column (1.8µm) was used with a gradient elution of MeOH and H_2O both with 0.1% HCOOH and the ionisation source (ESI) was operated in NI mode. 26 compounds were identified, among them 7 identified for the first time in this fruit. Total error and accuracy profiles were used as validation criteria. Calibration in the matrix was found to be more accurate than calibration without matrix. Trueness, repeatability, intermediate precision, selectivity, response function, linearity and LOD/LOQ for 12 non-anthocyanin phenolic compounds were evaluated and the quantification method validated.

[1]Kang *et al*., Food Chem. (2010) 122:610–617. [2]Kang *et al*., Food Chem. (2011) 128:152–157.

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MODULATION OF DNA DAMAGE REPAIR AND TRANSLESION SYNTHESIS: A POSSIBLE MECHANISM FOR NATURAL PRODUCTS CHEMOPREVENTION AND INDIRECT GENOTOXICITY?

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Balance between DNA damage and repair appears vital to the cellular machinery, to health and longevity. Given the complexity of DNA lesion tolerance and repair mechanisms and the high number of proteins and cofactors involved, we hypothesize that natural products from food and medicinal plants may interfere in these processes, notably by activating or inhibiting repair.Original methods were developed to probe the modulation of major mechanisms by natural products: *(i)* fidelity of translesion synthesis (TLS), a DNA damage tolerance mechanism that relies on specialized DNA polymerases (pols) able to insert a nucleotide opposite a lesion on the template strand (capillary electrophoresis); *(ii)* kinetics of rejoining strand breaks arising from damage and excision repair (comet assay); *(iii)* capacity of double-strand breaks repair by non-homologous end-joining (NHEJ), a preponderant mechanism in eukaryotes (on-chips microelectrophoresis); *(iv)* capacity of base excision repair, the major repair pathway responsible for removal of small DNA lesions (oligonucleotide repair chips). All methods were validated and could be applied to the study of modulation by natural products, including common flavonoids and dietary plants extracts, in FHs 74 Int cells. None of tested flavonoids inhibits repair; quercetin increases non-specific endonuclease activity, apigenin and epicatechin increase the excision of damages; sakuranetin increases non-specific enzymatic activities and decreases or increases specific activities. Raw plant extracts variously modulate activities. Although some of these protocols represent a simplification of the complexity of the *in vivo* organization of DNA into chromatin, data obtained so far show that herbals are likely to interfere in TLS and repair capacity.