

Identification of phenolic compounds and volatile compounds in polyphenols-rich extract of hybrid vitis vinifera I. Cultivars and their antioxidant properties

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Palavras-chave | Keywords:

[Hybrids grapes](#)

[phenolic compounds](#)

[Antioxidant](#)

There is little knowledge about the phenolic compounds of hybrids grape cultivars reported in literature. This work aimed to characterize the bioactive and volatile compounds from new hybrids grape cultivars (Sweet sapphire-SS and Sweet surprise-SU). The antioxidant capacity and total phenolic content were evaluated using DPPH, ABTS, FRAP, ORAC and Folin –Ciocalteu assays, using water and acetone extracts. Anthocyanins were characterized and quantified by HPLC. The VOCs were isolated using diethyl ether extraction in an ultrasonic bath and analyzed by GC/MS and GC/FID. SS acetone extract had the highest average value to DPPH (1.393,19 $\mu\text{mol TEAC/g}$), FRAP (208,81 $\mu\text{mol Fe}_2\text{SO}_4\cdot\text{g}^{-1}$), ORAC (341,01 $\mu\text{molar of trolox eq./g}$) and phenolic compounds content (200,75 mg GAE/100 g) among the cultivars. In ABTS analysis, SS water extract revealed the higher average value (549,37 $\mu\text{mol TEAC/g}$). SS samples showed high values of anthocyanins (23,04mg/100g) compared to SU sample (9,43mg/100g). Malvidin-3-O-glycoside (14,46mg/100g) and peonidin-3-O-glycoside (3,77mg/100g) were found as major compounds. The volatile fraction of SU (29 components) was richer than that of SA (21). Hexadecanoic acid [(238,72 \pm 327,87)ppb], 1-octacosanol [(122,05 \pm 25,80)ppb] and 1-hexacosanol [(105,84 \pm 18,33)ppb] were the major volatile compounds found in SA, while 1-hexacosanol [(225.66 \pm 30.90)ppb], 1-octacosanol [(123.10 \pm 29.20)ppb] and hexacosanal [(65.56 \pm 20.57)ppb] were the major ones in SU. 3,7-Dimethyloctan-1-ol, pentadecanoic acid, heptadecanoic acid and

octacosanal were found only in SA, while phenylethyl alcohol, 2-phenoxyethanol, dimethylbenzylcarbinol acetate, 2-p-tolylpyridine, manoyl oxide, ethyl (Z,Z)-9,12-octadecadienoate, ethyl eicosanoate, tetracosane, ethyl docosanoate, 1-tricosanol, pentacosanal and ethyl tetracosanoate were found exclusively in SU. Bis(2-ethylhexyl)-phthalate and bis[2-(2-butoxyethoxy)ethyl]adipate must be considered food contaminants of both cultivars coming from its R-PET boxes. The results obtained in this study showed significant differences among the varieties. Thus, the hybrids grape cultivars source in anthocyanins and high antioxidant capacity may serve as a new potential of nutraceuticals and functional food development.

Órgão de fomento e número do processo | Funding agency and case number:
Cnpq

Caracterização química e físico-química de alimentos (FQ)