



Physicochemical properties and chemical composition of essential oils extracted by hydrodistillation of culinary herbs: Parsley (*Petroselinum crispum*) and Celery (*Apium graveolens* L.)

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The physical-chemical parameters of essential oils can differentiate themselves by the way of cultivation, climatic interference and also in the development stage at harvest. The major application of essential oils in technological processes requires studies about those properties, targeting their possible beneficial capabilities. Parsley (*Petroselinum crispum*) and celery (*Apium graveolens* L.), that are belonging to the *apiaceas* family are aromatic leafy vegetables and condiments having essential oils, which are produced from the secondary metabolism of plants (1,2). Therefore was performed a study of physicochemical properties of the essential oil obtained from these plants for the identification of substances and comparison thereof. Whereas both these vegetables are widely used in cooking and have a great visual similarity and belongs to the same family. The two plants were dried in air circulating oven under two conditions (45 °C for 36 hours and 50 °C for 24 hours). It was used 30.0 g of fresh plants and dried plants for each extraction. The essential oil was obtained by hydrodistillation, using the Clevenger SL-76 equipment, for 2 hours. The yields parsley at 50 °C and 45 °C were respectively 0.22% and 0.16%. Besides, for the celery at 50 °C and 45 °C the yields were respectively 0.25% and 0.18%. The oils were analyzed by GC-MS Agilent 5977A and Agilent 7890B system with capillary column of fused silica (30m x 0.25 mm x 0.25 µm). The necessary conditions for analysis were performed according to the method described by Santos (3). The components of the oil were identified by comparing the spectra with NIST database and linear retention indices. In parsley oils, in all treatments (in nature, 50°C and 45°C) it was found that they are rich in apiol, with 49.04%, 50.64% and 56.53%, respectively, besides containing the following compound in common: 1,3-benzodioxole-4-methoxy-6-(2-propenyl) (26-36%). The celery oils proved themselves rich in limonene being: in nature (64.20%), 50 °C (71.04%) and 45 °C (66.64%). Celery characteristic aroma is associated to 3-butyl-3a,4,5,6-tetrahydro-3H-2-benzofuran-1-one, sedanolide, which was also found (18-25%). It is possible to observe that the yields obtained from the essential oils of celery and parsley presented significantly difference among the three treatments used. The yields of celery oil were higher than the parsley oils. Each oil presented different characteristic compounds in their chemical compositions.

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