Comparison of the presented biological activities of Essential Oils extracted from herbs: Parsley (*Petroselinum crispum)* and Celery (*Apium graveolens*)

Paula C. Frohlich[1], Sabryna I. G. Costa[1], Viviane S. Lobo[1], Claudia C. Machado[1], Maurício Rosa[2], Carla M. Fernandez[2], Cleberson Busso[3]

[1] Universidade Tecnológica Federal do Paraná – Campus Toledo, Toledo - Brazil
[2] Universidade Estadual do Oeste do Paraná - Campus Toledo, Toledo - Brazil
[3] Universidade Tecnológica Federal do Paraná – Campus Dois Vizinhos, Paraná - Brazil
Clau_dinha_machado@hotmail.com

Keywords: Essential oil, *Apium graveolens, Petroselium crispum.*

The economic importance of aromatic plants represent in large societies is associated with the application of their essential oils. Due to this, more research on biologically active substances of these plants are needed so that they can determine the beneficial effects and quantify them, in order to offer effective products that contain them. Because essential oils of parsley (*Petroselinum crispum*) and Celery (*Apium graveolens)* present a complex composition, they may present antioxidant and antibacterial activity, stimulating the interest of food, pharmaceutical and cosmetic industries (1,2). The microbiological experiments were performed by the standard methodology of diffusion in disk (3) and recommended by National Committee for Clinical Laboratory Standards (NCCLS). Tests were performed with the following bacteria: *Escherichia coli*, *Staphylococcus aureus* and *Bacillus cereus*. Three concentrations of oil were tested of oil: 5%, 10% and 20%. DMSO was used as solvent and 10 µL were applied on a disk at a concentration of 10% (v/v). It was used one plate for each essential oil with 5 discs, one disc with nothing being applied (negative control) and a disc with tetracycline antibiotic (positive control). There was no apparent inhibition for all of the oils and DMSO when compared to the positive control (*E. coli* and *B. cereus* 18.0 mm; *S. aureus* 20.1 mm). Apparently, a 20% solution of the celery oil at 50 °C for 25 h and the green parsley had a very low initial effect around the disk S. *aureus* (6.2 mm), but no significant effect. For the evaluation of the antioxidant activity of both essential oils, it was evaluated the capture capability of free radical DPPH (2,2-diphenyl-1-picrylhydrazyl). Four concentrations were tested for each sample: 5; 2.5; 1.25 and 0.625 mg / mL, all diluted in methanol. In 3 test tubes 0.1 mL of each dilution and 3.9 mL of 60 µM DPPH solution in methanol were added, and the volume completed to 4 mL. A test tube with a control was also prepared. The absorbance readings were made in a spectrophotometer (UV/VIS Shimadzu 1601PC) at 515 nm. The higher inhibition concentrations were presented in the following treatments: 5 µL/mL was the treatment at 50 °C for both essential oils, celery and parsley (6.23 and 1.34) respectively. On the other hand, in the concentrations of 2.5 µL/mL, 1.25 µL/mL and 0.625 µL/mL for parsley occurred in the 45 °C treatment (2.61 2.03 and 1.15) respectively. For the essential oil of celery in the green plant the inhibition showed 0.93 0.40 and 0.53, corresponding to the concentrations. The drying process influenced the biological characteristics of the essential oils of parsley and celery. Among the oils, the parsley one provided greater inhibitory potential index.

1. Santos, A.S. et al. System Description and Essential Oils Extraction Methods and Determination of Biomass humidity Laboratory. Ministry of Agriculture, Livestock and Supply. Belém, PA. 2004.
2. Biasi, L.A; Deschamps, C. Aromatic Herbs: the essential oil production to cultivation. Curitiba: Layer Studio Gráfico e Editora Ltda, 2009.
3. Bauer, A.N. et al. Am. J. Clin. Pathol., 1966, **45**, 393-496.

Acknowledgements: CAPES, Araucaria Foundation, UTFPR.

ISBN: 978-85-66836-11-0