

Phytochemical and antioxidant analysis of wild and *ex situ* cultivated shoots and tubers of *Harpagophytum procumbens* (Burch) DC ex.Meisn from Botswana

Motlhanka D.M.T

Botswana College of Agriculture, Medicinal Plants Research Laboratories, Department of Basic Sciences, Private Bag 0027, Gaborone, Botswana

*Corresponding Author's E-mail: motlhankadan@yahoo.com

(Accepted November 15, 2012)

ABSTRACT

Comparative phytochemical analysis [TLC method] and antioxidant activity of wild and *ex situ* cultivated shoots and tubers of *Harpagophytum procumbens* were done. Total phenolic content [Folin-Ciocalteu method] and free radical scavenging activity [1,1-diphenyl-2-picryl-hydrazyl assay] of both chloroform and methanol extracts were determined. Analysis of *ex situ* cultivated plant material showed presence of phytochemicals comparable with those found in the wild plants. The total phenolic contents (mg GAE/L) of methanolic tuber extracts from wild plants (3366 ± 22.68) were comparable to the methanolic tuber extracts (3297.00 ± 54.56) from *ex situ* cultivated plants. The total phenolic contents of methanolic leaf extracts from wild (2562 ± 158.77) plants were also not significantly different from the *ex situ* (2686.00 ± 10.49) cultivated *H. procumbens*. Similar trends were observed in the chloroform extracts of both wild and *ex situ* cultivated *H. procumbens*. The free radical scavenging activities also correlated well with the total phenolic contents of both wild and *ex situ* cultivated plants. At all tested concentrations, the methanolic extracts of both wild and *ex situ* cultivated plants were $\geq 80\%$. The scavenging potencies of chloroform extracts were consistently lower than the methanol extracts in both *ex situ* cultivated plants and wild species. The consistency in presence of phenolic compounds in these plant materials is of interest from both the pharmacological and conservation point of view given the role played by these compounds in oxidative stress. These results indicate that *ex situ* cultivation can be both a conservation strategy and can provide an alternative and sustainable source of therapeutically active compounds.

Key words: *Harpagophytum procumbens*; Phenolic content; free radical scavenging activity; wild shoots and tubers; *ex situ* cultivation