



Physicochemical characterization and extraction of bioactive compound from *Larrea tridentata* leaves

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Larrea tridentata plant is originally from arid regions of Northern Mexico and South-western of United States and is commonly known as creosote bush or chaparral. This plant is a notable source of a bioactive compound called nordihydroguaiaretic acid (NDGA) with important biological activities of great interest in the health area [1]. The purpose of the present study was to perform a physicochemical characterization of *Larrea tridentata* leaves, and to evaluate the effect of different organic solvents on NDGA extraction and antioxidant capacity of the extracts.

A high content of total lignin (35.96%) was found in *Larrea tridentata* leaves compared with other fractions, such as cellulose and hemicelluloses (10.09 and 13.10%, respectively). *Larrea tridentata* leaves contained 13.01% protein, 2.62% acetyl groups and 7.91% ash. NDGA extraction varied considerably according to the used solvent. Heating played an important role in NDGA recovery when using methanol; but did not influence the extraction with ethanol or acetone. The highest NDGA content (46.96 ± 3.39 mg/g DW plant) was recovered using 90% methanol. However, the highest total phenolic content (487.13 ± 27.68 mg GAE/g DW plant) was obtained using 90% acetone. All the extracts showed antioxidant capacity with similar results for DPPH radical scavenging activity. Different behavior was observed for FRAP results where extracts obtained using 50% and 90% methanol had significantly higher ($p < 0.05$) values (2.58 ± 0.10 and 2.77 ± 0.19 mM FE(II)/ g DW plant, respectively) than the remaining extracts. These high antioxidant activity values for FRAP assay might be explained by the high TPC and NDGA concentrations in both extracts.

References

[1] Lambert JD, Dorr RT, Timmermann BN, "Nordihydroguaiaretic Acid: A Review of Its Numerous and Varied Biological Activities", *Pharm. Biol.* (2004) **42**: 149-158.