

Radical scavenging capacity and inhibition of oxidation of ascorbic acid by six aqueous infusions of leaves

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Antioxidants can scavenge free radicals and quench metal ion by two major mechanisms: by reduction via electron transfer or by hydrogen atom transfer that may also occur in parallel. The chemical structure of polyphenols is especially suited to perform an action such as hydrogen or electron donor, with antioxidant capacity even better than that of vitamins E and C.

The main of this study was to characterize the aqueous extracts of leaves of melissa (*Melissa officinalis*), murta (*Ugni molinae* Turcz), rosemary (*Rosmarinus officinalis*), laurel (*Laurus nobilis*), cedron (*Lippia citriodora*) and matico (*Buddleja globosa*) in relation to its concentration of polyphenols and DPPH[•] and ABTS^{•+} radical scavenging capacity, as well as of inhibition of the copper-catalyzed oxidation of ascorbic acid (% I.O.A.S.A). Leaves from six herbs mentioned were dried (20 °C/18 hours) and crushed. The aqueous extract of leaves was made in concentration of 100 mg/mL at 30°C for 90 min. The results are shown in Fig. 1. It should be noted that lower values of IC₅₀ means better antioxidant capacity of the herb.

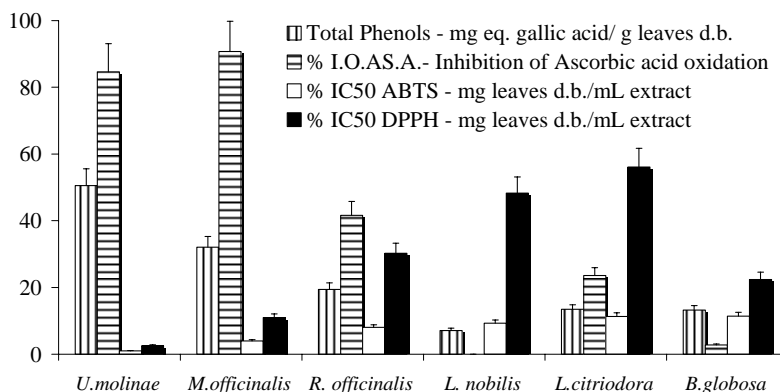


Fig 1. Total phenols and antioxidant capacity of leaves extracts.

The values of DPPH[•] and ABTS^{•+} were different for *B. globosa*, *R. officinalis*, and *L. citriodora*. This difference can be attributed to both structural factors of the antioxidant molecules present in each extract and the availability of these compounds react with the DPPH and ABTS^{•+} radicals. However, the number of phenolic –OH groups in the structure of an antioxidant molecule is not always the only factor determining its antioxidant activity. Positions of phenolic –OH groups, presence of other functional groups in the whole molecule, such as double bonds and their conjugation to –OH groups and ketonic groups, also play important roles in antioxidant activities.

The %I.O.A.S.A of *U. molinae* and *M. officinalis* extract is statistically the same, which is higher than that of *B. globosa*, *R. officinalis*, *L. nobilis* and *L. citriodora*. Whereas the aqueous extract of leaves of *U. molinae* has a reducing power of the radical ABTS^{•+} and DPPH[•], significantly higher ($p < 0.05$) than other studied herbs, inhibiting a 50% of radical with a concentration of 0.99 ± 0.06 and 2.55 ± 0.10 [mg leaves d.b./ mL], respectively.

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