EVALUATION OF THE ANTIOXIDANT ACTIVITY OF THE ETHANOLIC EXTRACT FROM TERMINALIA CATAPPA L. LEAVES BY THE 2,2-DIPHENYL-1-PICRYLHYDRAZIL METHOD

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Introduction: The usage of plants in folk medicine throughout human history has aroused great interest concerning to the chemical constituents with different biological activities such as antimicrobial, antioxidant, anti-inflammatory, anticâncer and hepatoprotective. Among all those different species, Terminalia catappa L. leaves ethanolic extract has been reported for the presence of tannins, alkaloids, steroids and saponins. The major metabolites previously described for T. catappa are hydrolysable tannins (also known as ellagitannins) such as punicalin and punicaligin. The ellagitannins derivatives such as gallic acid and ellagic acid have also been reported and are linked to the extracts antioxidant activities. In this context, the objective of this study is to evaluate the antioxidant potential of the ethanolic extract of T. catappa in different concentrations, as well as verifying the amount of total phenolic compounds present in the extract. **Methodology:** The T. catappa leaves were washed with destilled water and dried in the oven at 50ºC for six consecutive days. After drying, the matherial was powdered and extracted with absolute ethanol by the maceration technique in the proportion of 1:4 (p/v). The antioxidant assays were performed by the serial dilution of the extract on the range of 15,625ug/mL up to 500ug/mL and each concentration capacity of scavenging the stable free radical 2,2-diphenyl-1-picrylhydrazil (DPPH) standard solution (40ug/mL). The results were determined by UV-vis spectrophotometry at 517nm wavelength. The quantification of phenolic compounds content was performed by Folin-Ciocalteau's method using a dilluted extract of 12,5ug/mL. **Results:** The experiments were replicated (n=3) and the results were expressed as percentage of antioxidant activity (%AA) for each concentration. The statistics were performed using GraphPad Prism, using one-way ANOVA followed by Tukey's test for multiple comparisson between the different concentrations of the extract. The ANOVA showed significant difference among means ($p < 0,05$). The Tukey's test showed no significant difference between the concentrations of 15,625ug/mL vs 31,25ug/mL; 15,625ug/mL vs 62,5ug/mL; 62,5ug/mL vs 125ug/mL; 125ug/mL vs 500ug/mL and 250ug/mL vs 500ug/mL ($p > 0,05$), while the other concentrations showed statistical significant difference amongst themselves. The %AA for the different concentrations of the extract were: 15,625ug/mL: 83,48% ± 2,301; 31,25ug/mL: 82,90% ± 1,004; 62,5ug/mL: 87,25% ± 0,5020; 125ug/mL: 88,12% ± 1,328; 250ug/mL: 92,46% ± 0,5020 and 500ug/mL: 91,88% ± 1,810. As for the Folin Ciocalteau assay, T. catappa presented 863,66ug/mL ± 0,2127 of total phenolic compounds, calculated by using a gallic acid standard curve. **Conclusion:** All the concentrations tested showed antioxidant activity values higher than 80%, expressed by their free radical DPPH scavening capacity, whereas the 250ug/mL dillution demonstrated to be the most antioxidant (92,46% ± 0,5020). The activity of the T. catappa leaves might be related to the high value of phenolic compounds found in the ethanolic extract. From the obtained results, more sofisticated analyses (HPLC-MS) are needed to elucidate the most active fractions, as the chemical famlies and structures related to the antioxidant activity for further studies in vitro or in vivo for novel biological applications of this and other natural products.

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