

EVALUATION OF SOME BIOLOGICAL ACTIVITIES OF *Costus Sp* BENBOTT Amel^{1,2*}, KAROUCHE Saida^{1,2}, MOSBAH Camillia^{1,2}

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Introduction & Objectives:

Costus.sp belongs to the family Costaceae (1), and is one of the most widely used plants in folk medicine against many incurable diseases (2). The aim of this study is the chemical detection and quantification of phenolic compounds and flavonoids of *Costus.Sp* root extracts, in addition to the study of the biological activities of evaluating the antioxidant activity by DPPH and FRAP tests, antibacterial activity and anticoagulant activity.

Methodology (Material and methods):

The roots of *Costus* were obtained from the herbal market in the Oum El Bouaghi region. Approximately 25 g of dried root powder was subjected to a Soxhlet apparatus and extracted with 250 ml ethanol 80%, the extraction solution filtered through Whatman No. 4 then evaporates to remove the solvent by rotary evaporator at (45-50°C). The dried extract was stored under freezing at -18°C until it could be used in many biological activities such as antioxidant activity, antibacterial activity and anticoagulant activity.

Results and Discussion: The results of qualitative studies by phytochemical survey showed the richness of this plant in various secondary metabolites. The extraction of phenolic compounds using polar gradient organic solvents showed that the highest yield was recorded with the methanolic extract (22,18%) compared to the rest of the extracts. As for the quantitative detection of these extracts, it was shown that the extract of the *Costus* plant is very rich in polyphenols, flavonoids and tannins with a value of (132,4 ± 2,68 mg AGE / g Ext), (35,63 ± 1,71 mg QE / g Ext), (15.24±0.95 mg ECT/gE) respectively. On the other hand, biological studies through the DPPH test and FRAP test showed that all extracts have the ability to scavenge free radicals with good levels of effect at different concentrations, with some slight differences. We found in the DPPH test a high ability to inhibit ethyl acetate extract with a value of (IC₅₀=38.50 µg/ml), the FRAP test also showed the highest value of (EC₅₀=30.68µg/ml) with the methanolic extract. As for the anti-bacterial activity, the *costus* plant extracts showed significant activity against three bacterial strains, where the largest diameter of the inhibition zone reached 25 mm with the methanolic extract against *Staphylococcus aureus*. The results of anticoagulant activity also showed that the methanolic extract and the aqueous extract have the ability to prolong thrombin time (TP) and activated partial thromboplastin time (TCK), where very remarkable values were recorded.

Conclusion: We conclude from this study that the extracts of *Costus* root have high biological activities and protective properties towards oxidative stress and antibacterial activity, in addition to anticoagulant activity, which was associated with their high content of polyphenols and flavonoids.

Keywords: *Costus Sp*, Phenolic compounds, antioxidant activity, anticoagulant activity, antibacterial activity.

References

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