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Comparative analysis of a Mediterranean wild medicinal plant parts' *in vitro* biological activities.

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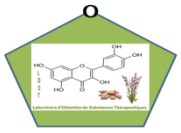

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Abstract: In the framework of enhancing medicinal plants of the Mediterranean flora, the present work investigates phytochemical screening of different parts' extracts of a wild medicinal plant from Asteraces family: roots, leaves, flowers and aerial parts. It also highlights the quantification of the main secondary metabolites; total polyphenols and flavonoids and its correlation with *in vitro* antioxidant and antimicrobial activities. Biological tests have shown encouraging results for the antioxidant activities namely: reducing power, hydrogen peroxide and hydroxyl radical scavenging, and exhibit flowers extract as promising source of phenols and potent antioxidants with the ability of breaking hydroxyl free radical chain generating, the main responsible of oxidative stress, on the other hand antibacterial and antifungal activities tested by discs diffusion method on agar medium, were carried out; and the effectiveness of tested extracts has been demonstrated against five pathogen bacterial and fungal referential strains. Obtained results exhibit aerial part as better phenols sources, whereas roots extract showed better *in vitro* antimicrobial activity. Obtained results showed nice correlation and open large perspectives on bioactive compounds assessment, SAR studies and clinical trials.

Keywords: Asteraces; Polyphenol; Flavonoides; Antioxidant Antimicrobial activity.

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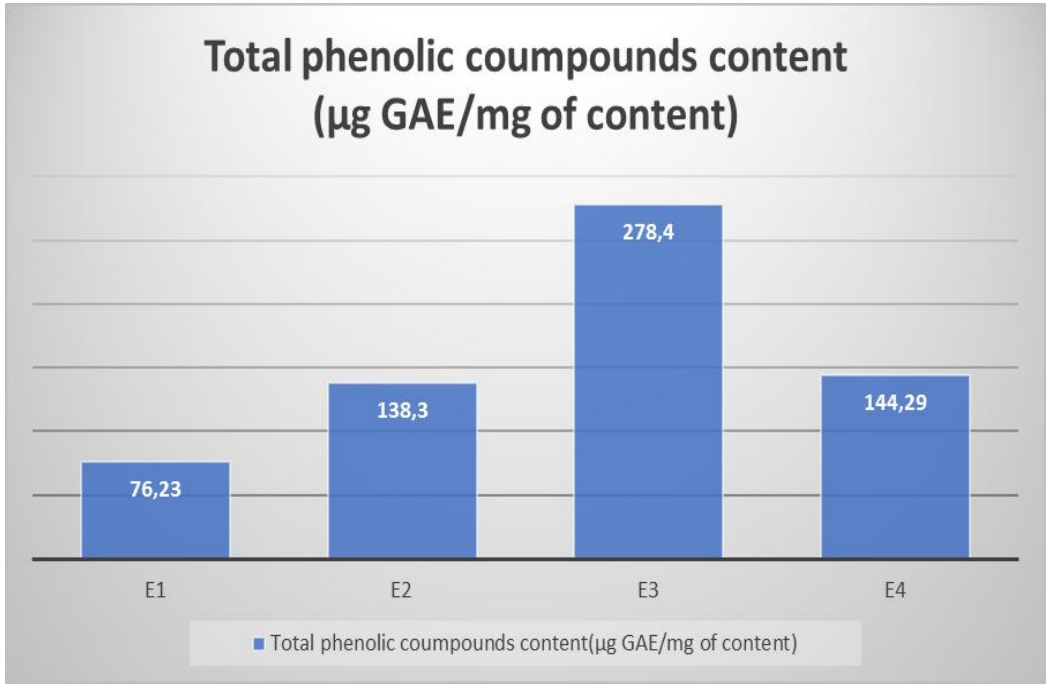
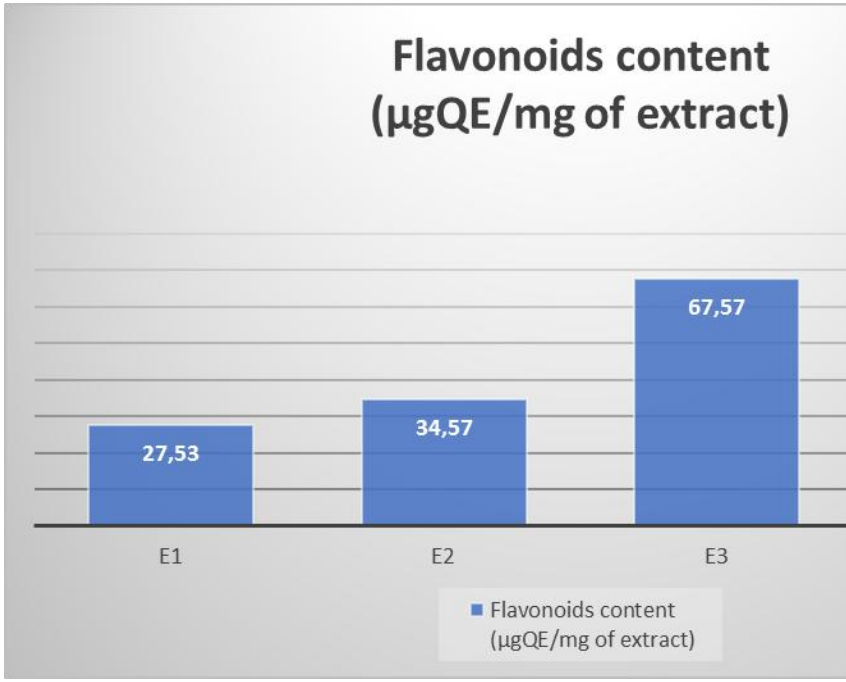
Results and Discussion

Total phenols and flavonoids contents

TFC & TPC Results

Extracts	Total phenolic compounds content (µgGAE/mg of extract)	Total Flavonoids content (µgQE/mg of extract)
E1	76,23±0.00	27,53±0.01
E2	138,30±0.00	34,57±0.04
E3	278,40±0.01	67,57±0.00
E4	144,29±0.00	23,21±0.00





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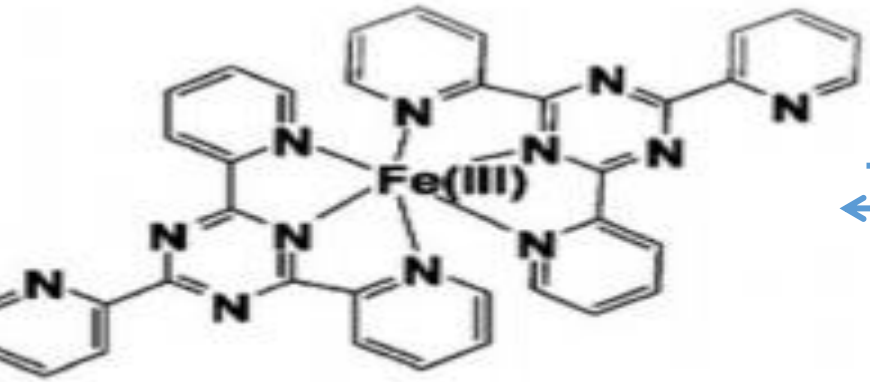
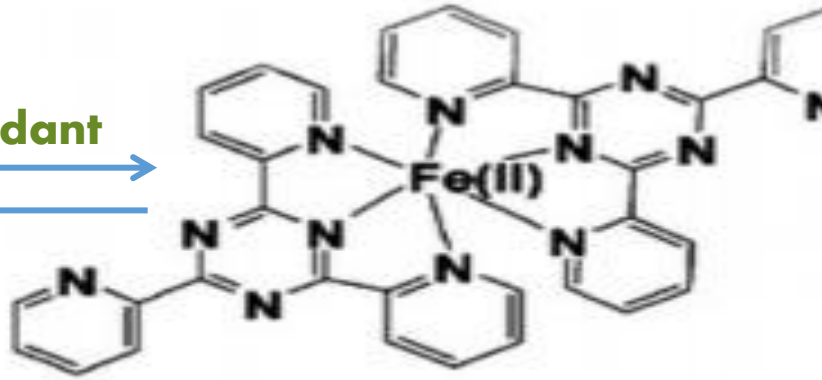


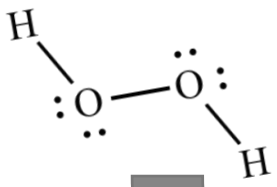
$[Fe(III)(TPTZ)_2]^{3+}$

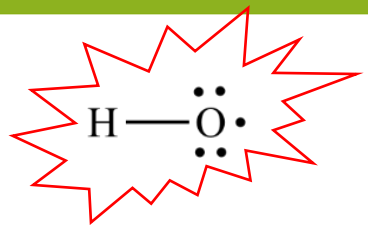
Antioxidant

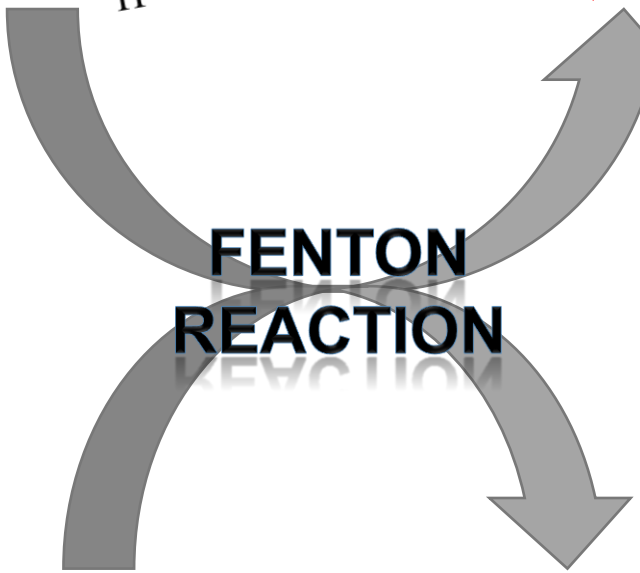


$[Fe(II)(TPTZ)_2]^{2+}$

The Hydrogen peroxide activity and hydroxyl radical scavenging assays



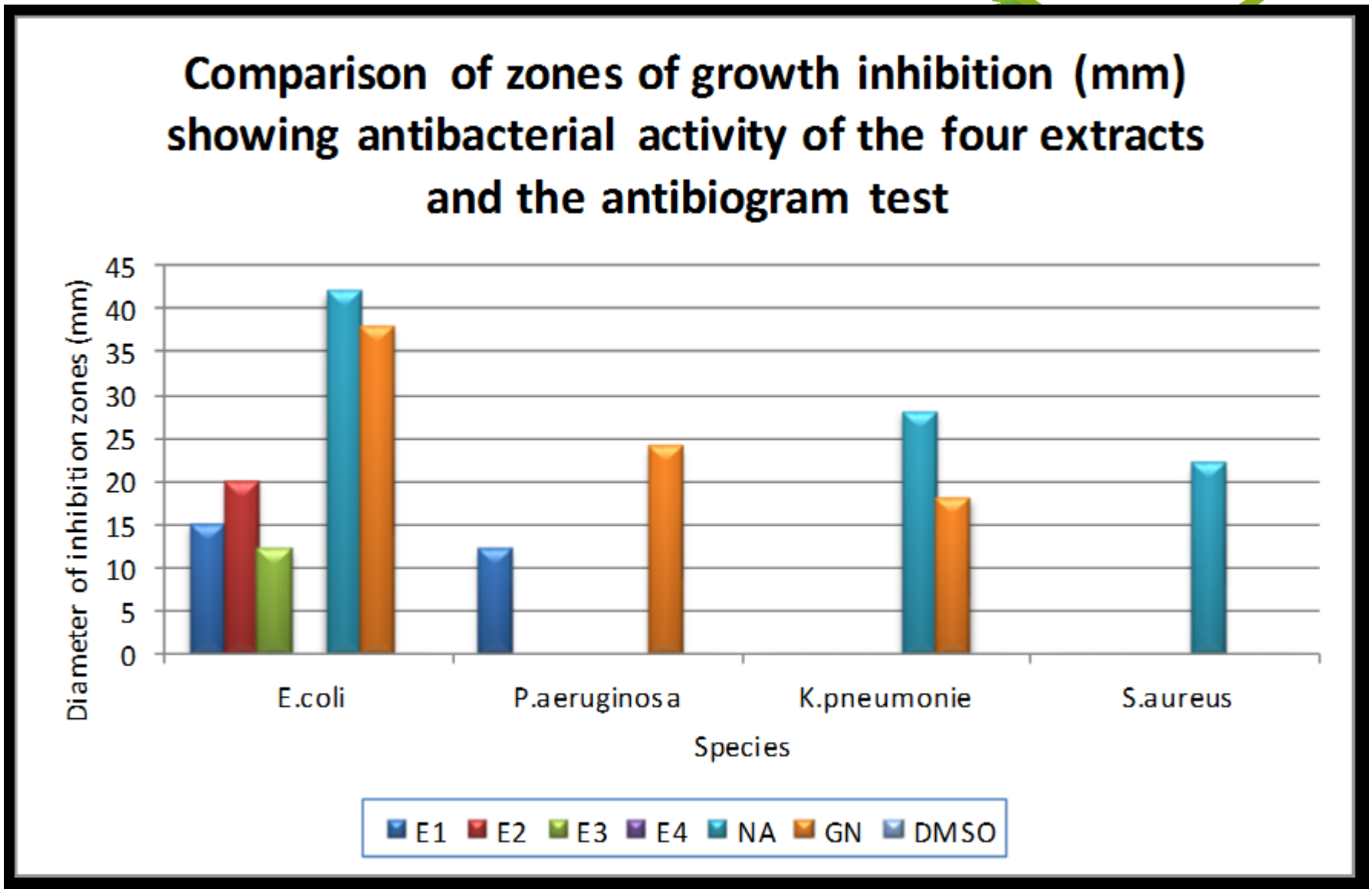


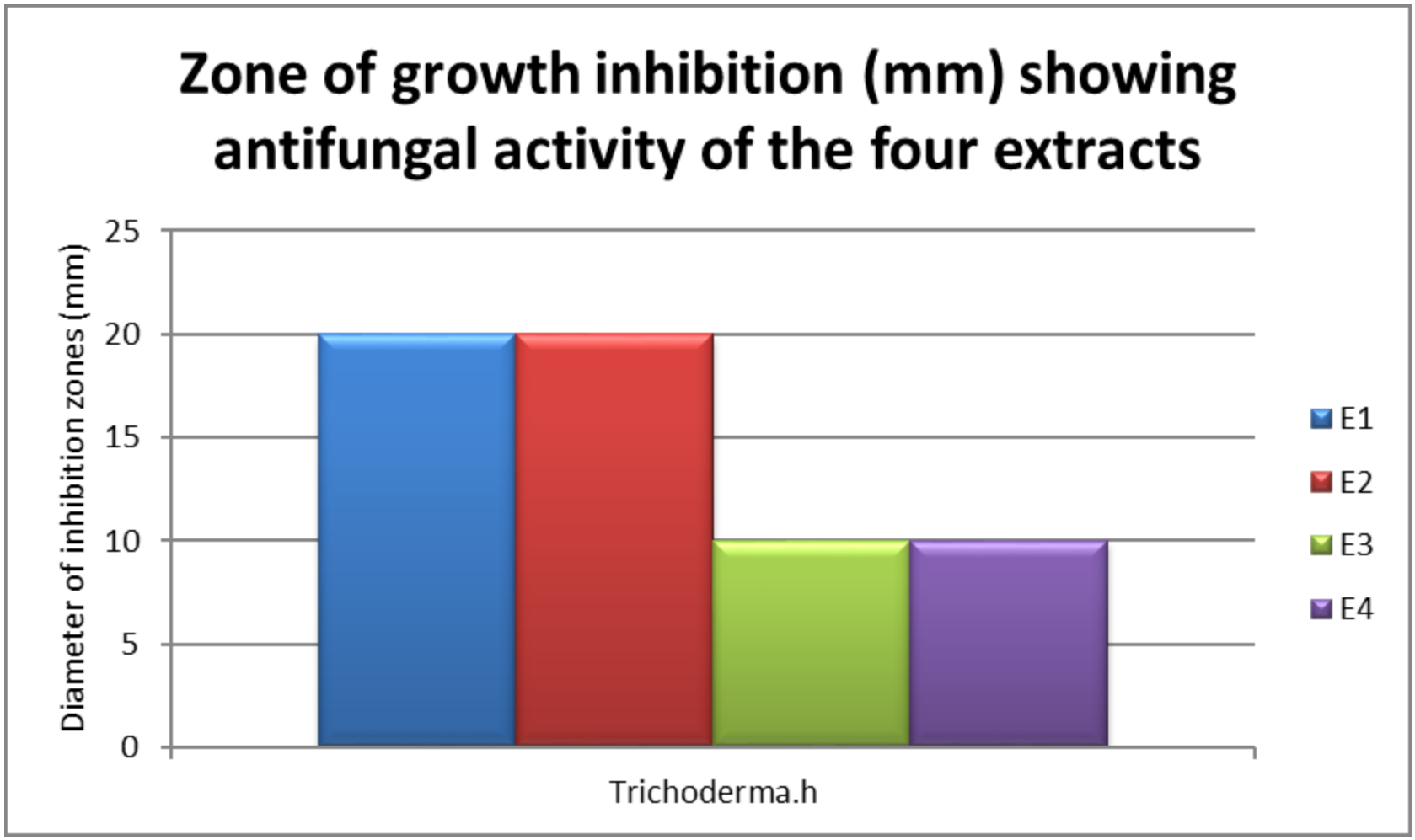


$H_2O_2 + O2^{\bullet -} \rightarrow OH^{\bullet} + OH^- + O_2$

Fe^{2+} Fe^{2+}

Antimicrobial activity




Zone of growth inhibition (mm) showing antifungal activity of the four extracts
Diameter of inhibition zones (mm)
25
20
15
10
5
0
Trichoderma.h
E1
E2
E3
E4

Conclusions: The present work aimed at promoting Algeria's medicinal plants in order to facilitate people's access to improved traditional medicines with less side effects and toxicity risks. In order to validate the traditional use of the wild plant species used in the present study, and look for alternatives to synthetic chemicals, this research has been conducted based on the quantitative determination of total polyphenols, total flavonoids and the assessment of antioxidant, antimicrobial and antifungal properties of studied plant.

Through this study, a correlation between the total phenol content, the flavonoid content and the antioxidant potential was establish and which turned out to be probably due to the plant richness in phenol compounds, flavonoids and other secondary metabolites, making it a promising source for treatment of many diseases by using it to synthesize new phytomedicines.

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