

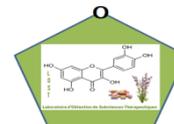
Medicinal plant roots microbiome in antibiotic resistant fight therapy

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Abstract: In the framework of enhancing a wild and invasive Mediterranean plant which aerial parts are known for its traditional uses as natural insecticide, fire barrier, veterinary and human medicinal plant, In this perspective aerial and roots parts were investigated chemically and microbiologically investigated as the microbial world has caught immense attention in recent years for both humans and plants, it is recognized that microbes hold an enormous potential to increase host health.

To achieve our hypothesis, quantification of the main secondary metabolites; total polyphenols and flavonoids, in addition to *in vitro* antibacterial and antifungal activities tested by discs diffusion method on agar medium, were carried out; the effectiveness of tested extracts has been demonstrated against five pathogen bacterial and fungal referential strains, then compared.

Obtained results exhibit aerial part as better phenols sources, whereas roots extract showed better *in vitro* antimicrobial activity, which confirms that microbial resistance potential of roots is not attributed or correlated to phenols content

The present study open large perspectives to encourage intelligent culture and exploitation of such invasive plants and its bioactive compounds assessment, roots microbiome and antimicrobial mechanism, in order to develop low cost and safe biosanitary products .

Keywords: Medicinal plant roots, Phenols, antimicrobial activity.

Results and Discussion

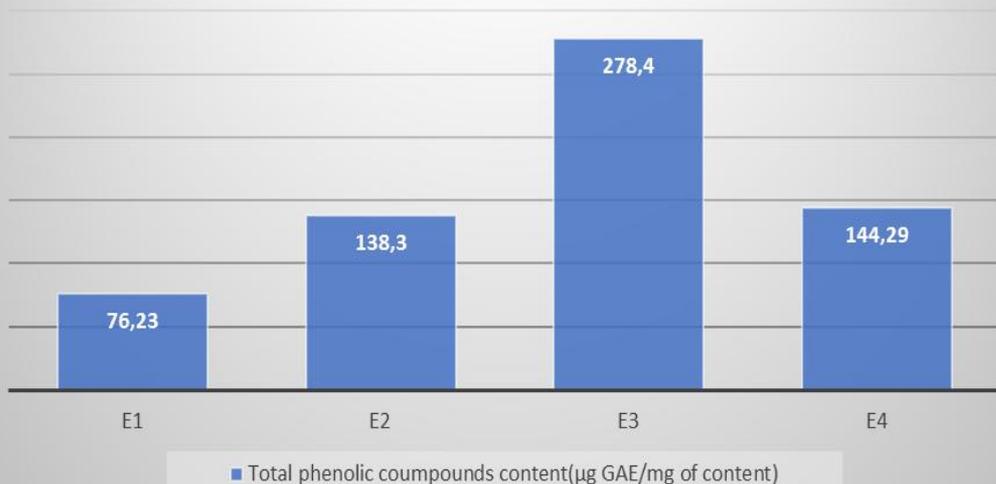
Total phenols and flavonoids contents

**TFC
&
TPC
Results**

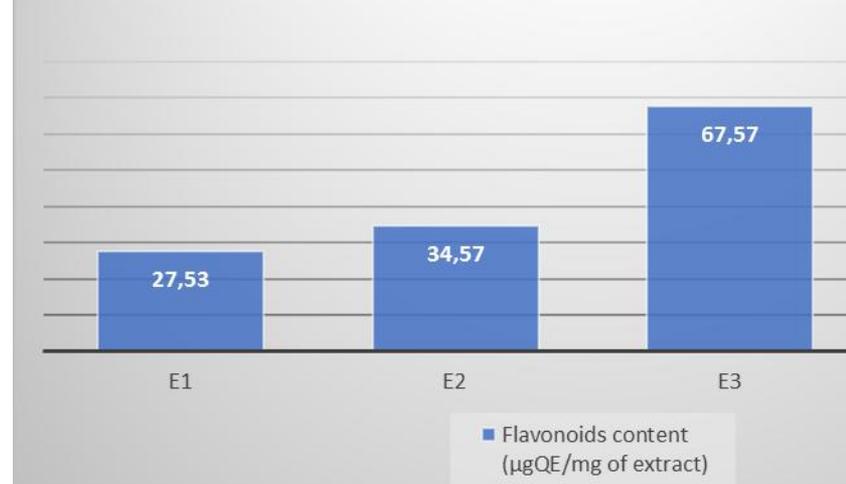


Extracts	Total phenolic compounds content ($\mu\text{gGAE}/\text{mg}$ of extract)	Total Flavonoids content ($\mu\text{gQE}/\text{mg}$ of extract)
E1	76,23 \pm 0.00	27,53 \pm 0.01
E2	138,30 \pm 0.00	34,57 \pm 0.04
E3	278,40 \pm 0.01	67,57 \pm 0.00
E4	144,29 \pm 0.00	23,21 \pm 0.00

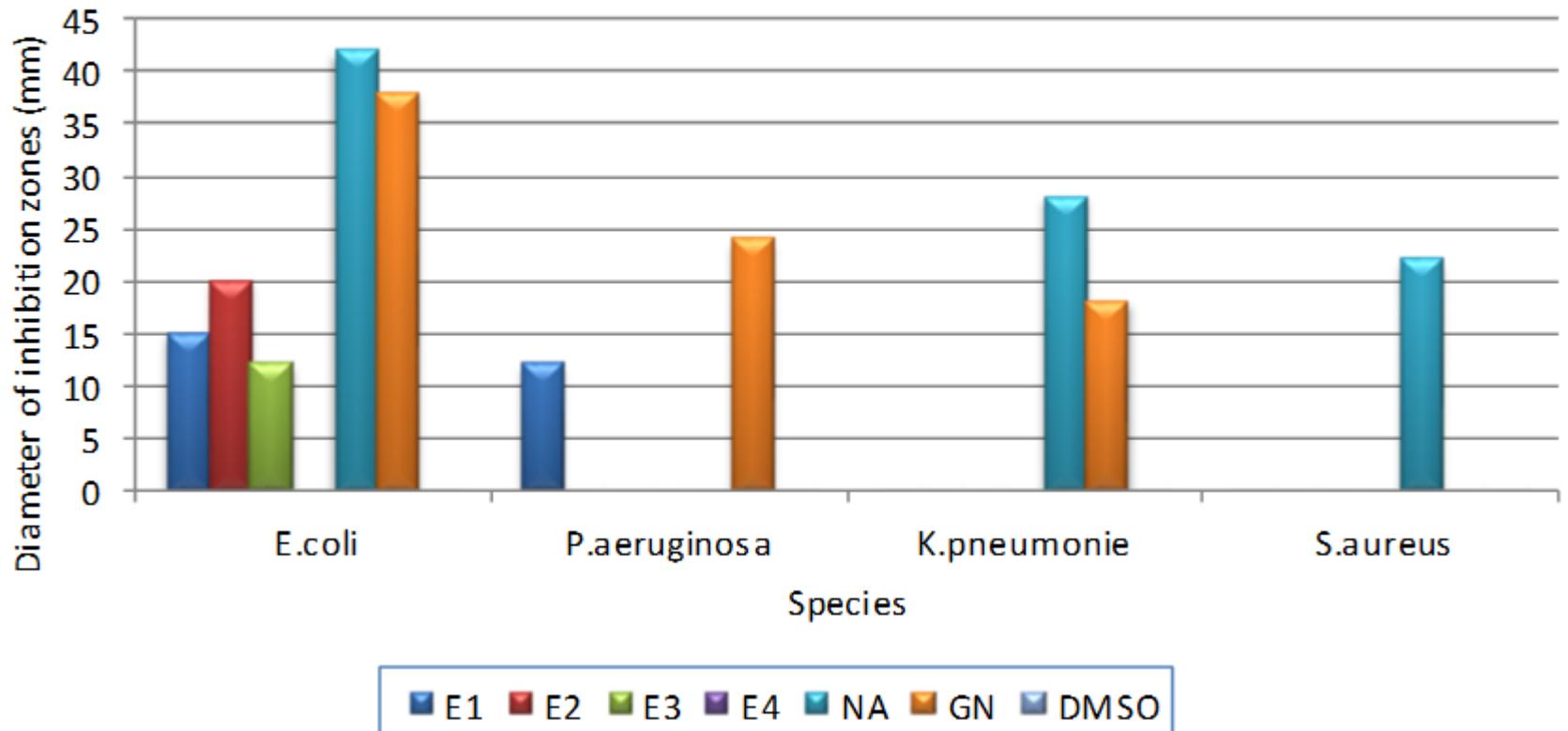
Total phenolic compounds content ($\mu\text{g GAE}/\text{mg}$ of content)



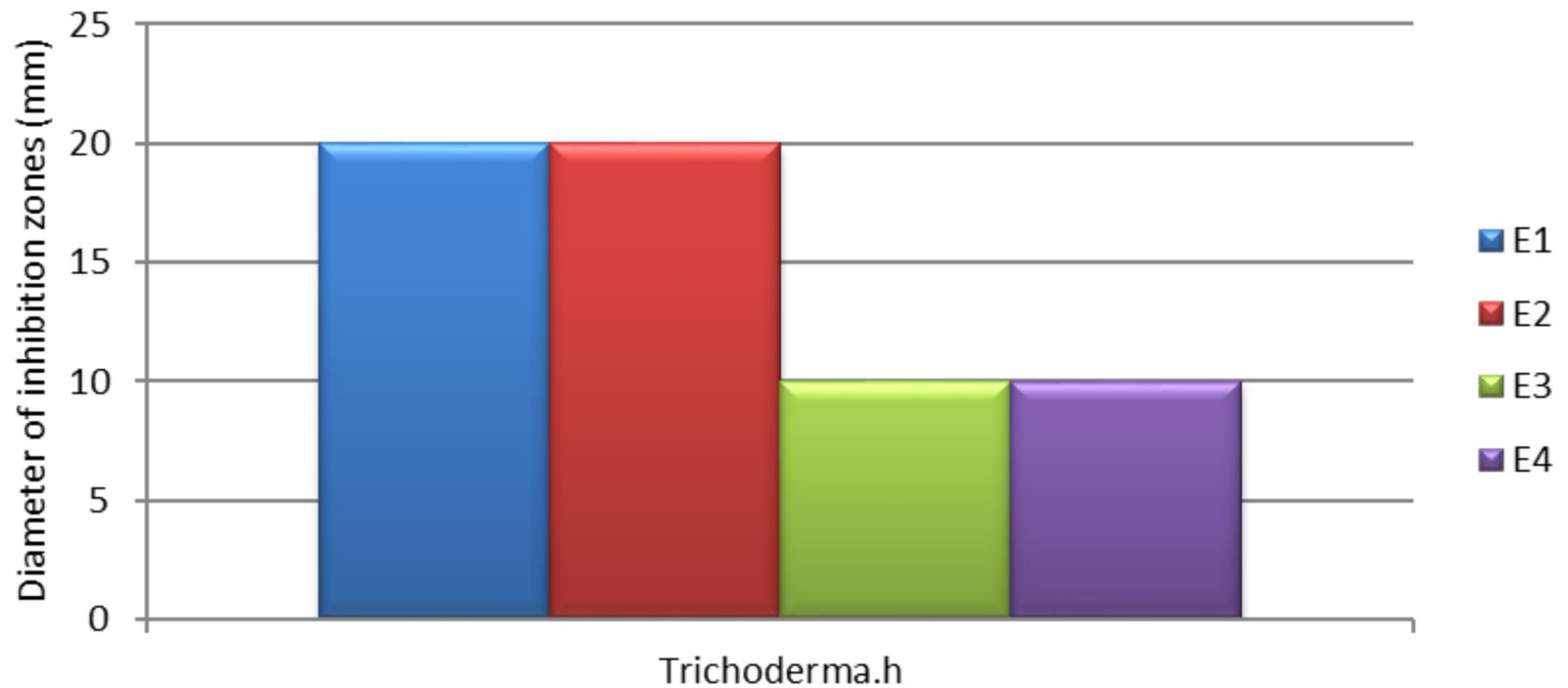
Flavonoids content ($\mu\text{gQE}/\text{mg}$ of extract)



Comparison of zones of growth inhibition (mm) showing antibacterial activity of the four extracts and the antibiogram test and the antibiogram test



Zone of growth inhibition (mm) showing antifungal activity of the four extracts



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 antibacterial and antifungal properties of studied plant.

Through this study, aerial part was better phenols source, whereas roots extract exhibits better *in vitro* antimicrobial activity, which confirms that microbial resistance potential of roots is not attributed or correlated to phenols content.

The present study open large perspectives to encourage intelligent culture and exploitation of such invasive plants and its bioactive compounds assessment, roots microbiome and antimicrobial mechanism, in order to develop low cost and safe biosanitary products as fungicide and bactericide.

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