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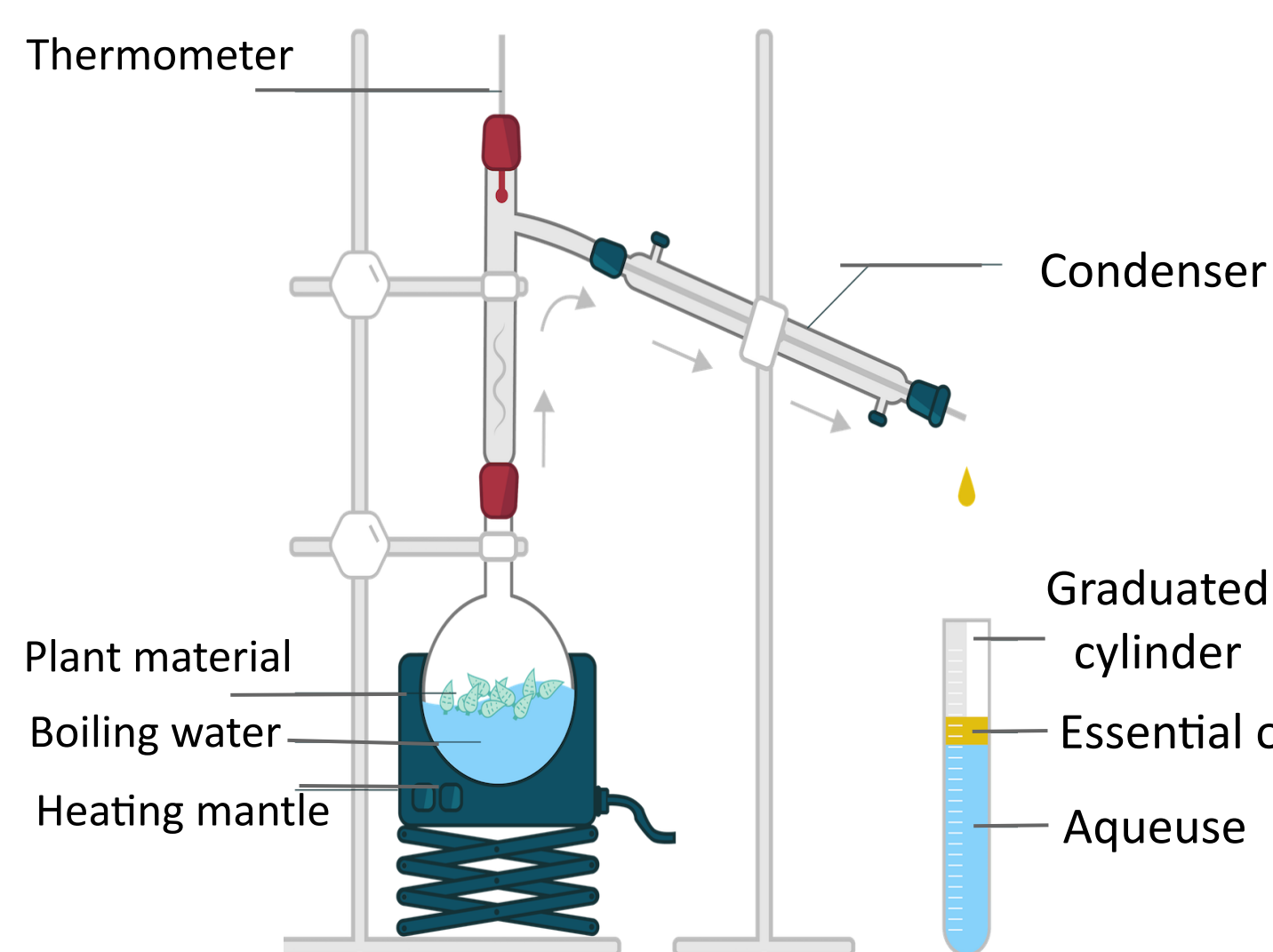


Introduction & Objectives

Pistacia lentiscus, commonly known as the mastic tree, is a dioecious plant of the Anacardiaceae family, widely used in Mediterranean traditional medicine for treating gastrointestinal, skin, and respiratory disorders. Although the medicinal properties of *P. lentiscus* have been extensively studied, the role of dioecy in influencing its chemical composition and antibacterial activity remains underexplored. This study aimed to investigate the impact of dioecy on the chemical composition and antibacterial activity of essential oils extracted from the leaves of male and female *P. lentiscus* plants.



Hydrodistillation of essential oils using a Clevenger apparatus



Methods

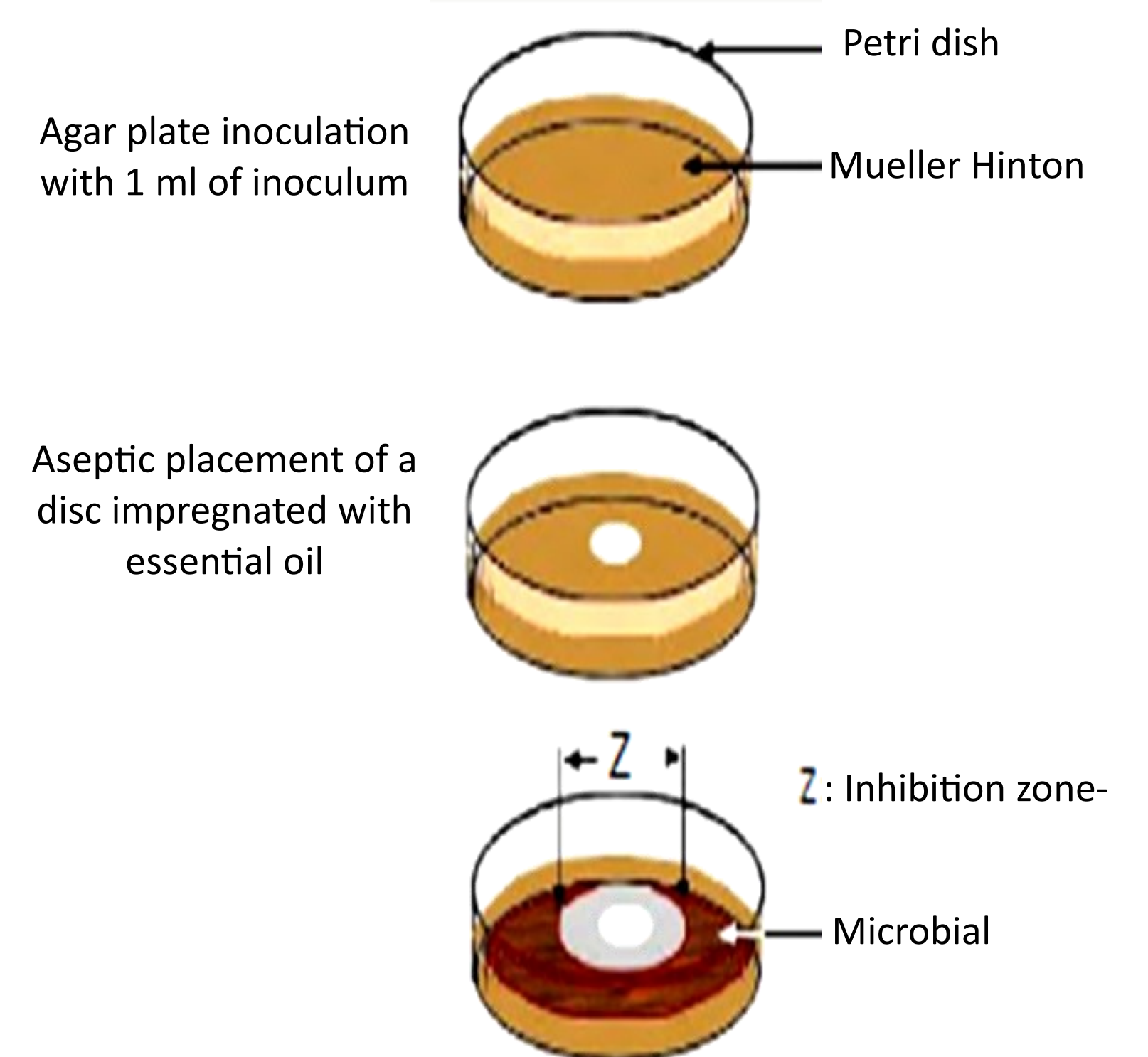
Organoleptic and physico-chemical characterization

Organoleptic properties	Physics properties	Chemical properties
Odor	Relative density	Acid index
Color	Refractive index	Ester index
Appearance	Rotatory power	Saponification index

Chemical composition analysis by GC/MS



Evaluation of antibacterial activity by the antibiogram technique



Results

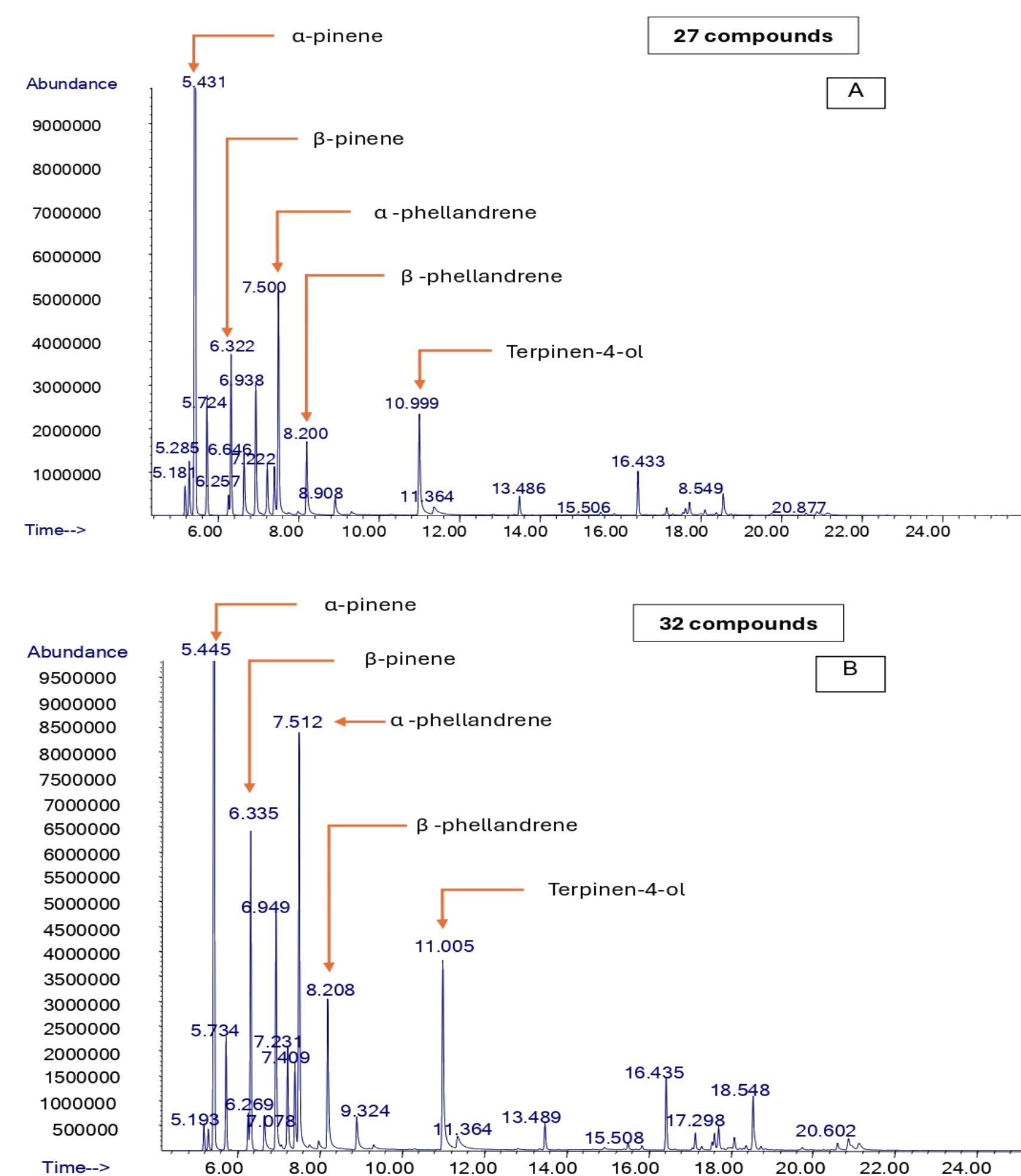
Essential oil yield

Yield (v/w)	Experimental values	Literature
<i>P. lentiscus</i>		
Female plant leaves	0.71 ± 0.10 %	0.06 ± 0.05 % [1] 0.14 (male) 0.16 (female) % [2]
Male plant leaves	0.49 ± 0.02%	0.16 % [3]

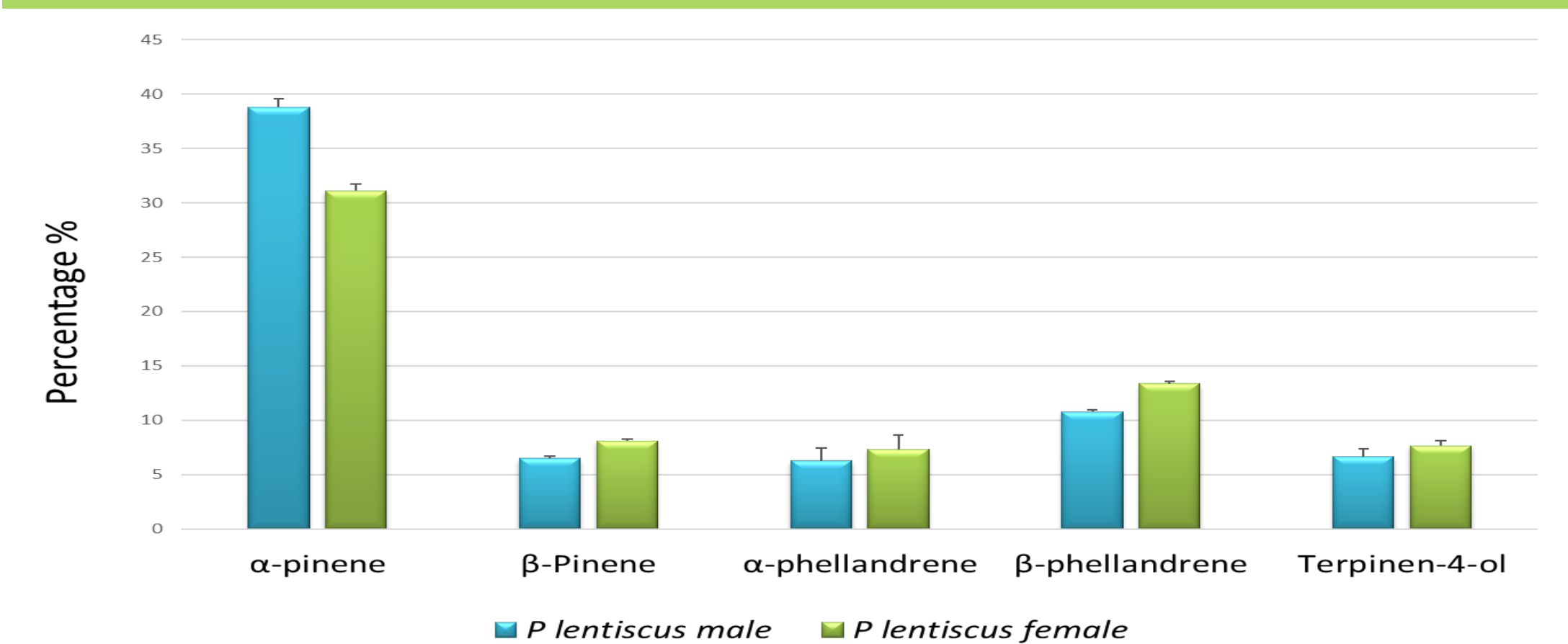
Organoleptic and physicochemical characteristics

Properties	male <i>P. lentiscus</i> L.	female <i>P. lentiscus</i> L.	AFNOR [4]
Organoleptic characteristics			
Odor	Characteristic	Characteristic	Characteristic
Color	Pale yellow	Pale yellow	Pale yellow
Aspect	Liquid, fluid, and clear	Liquid, fluid, and clear	Liquid, fluid, and clear
Physicochemical characteristics			
Relative density at 20°C	0.830	0.830	0.884- 0.912
Refractive index at 20°C	1.469	1.470	<5
Acid index	1.06	0.54	<10
Ester index	22.86	31.01	55 -72

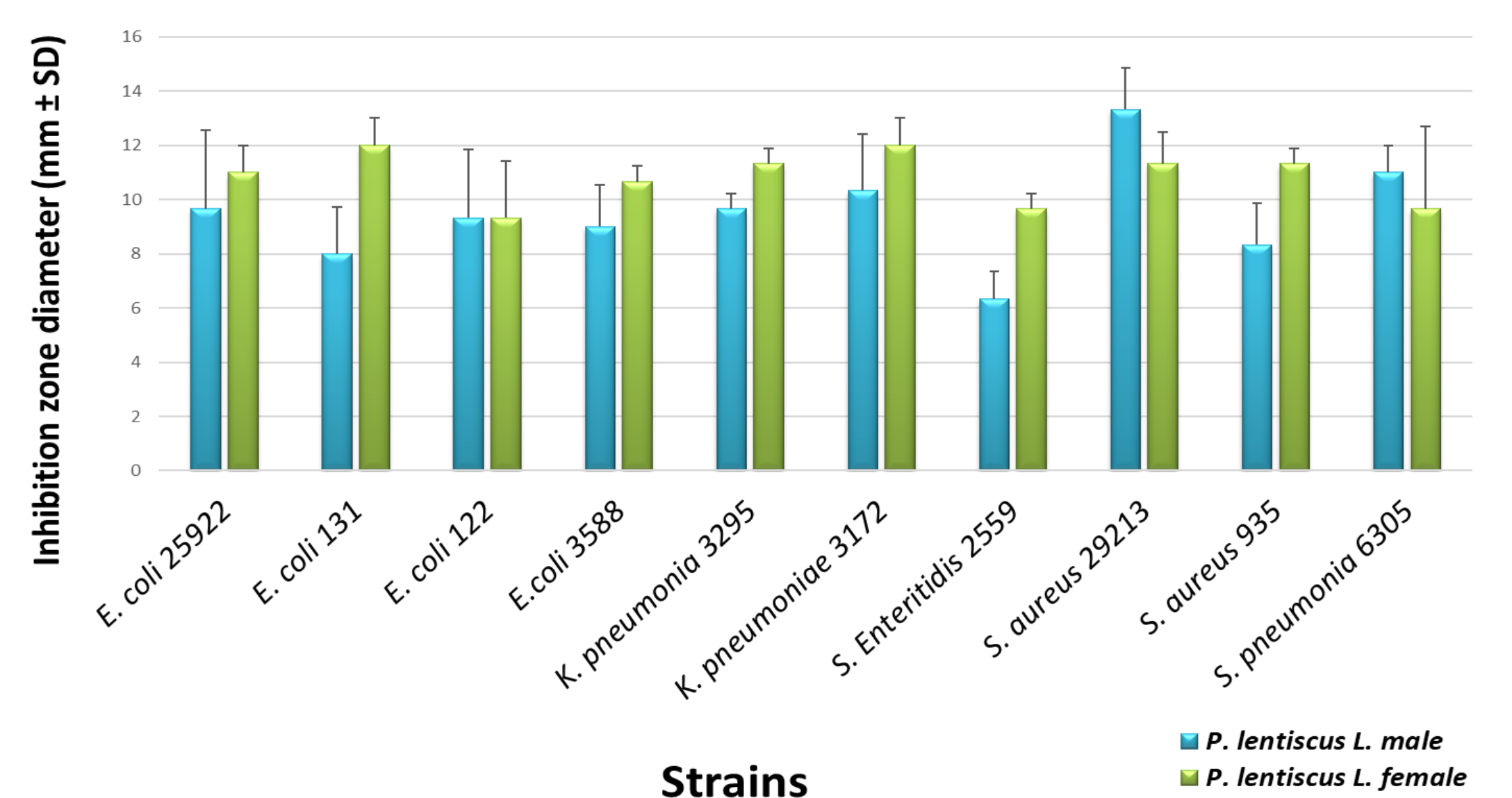
Chemical composition of E.Os. from leaves *P. lentiscus* male (A) and female (B)



The major compounds of E.Os. from leaves from *P. lentiscus* L. male and female



Graphical representation of the antimicrobial activity results



The analysis revealed a predominance of non-oxygenated monoterpenes in all samples, with essential oils from female plants displaying greater molecular diversity. This chemical variability appears to influence antibacterial activity, as essential oils from female plants were more effective against Gram-negative bacteria, particularly *Escherichia coli* and *Klebsiella pneumoniae*, whereas those from male plants exhibited higher activity against *Staphylococcus aureus*. These differences could be linked to the presence of major compounds such as α -pinene, β -pinene, α -phellandrene, β -phellandrene, and terpinene-4-ol, known for their antibacterial properties, as well as to possible synergistic effects among the constituents [5].

Conclusion

These results highlight the influence of dioecy on the chemical composition and antibacterial properties of *P. lentiscus* essential oils, suggesting that differences in bioactive compound profiles between male and female plants could be leveraged for targeted antibacterial applications

References

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