

Pinus glabra - As a potential source of anti-*Mycobacterium tuberculosis* agent: Phytochemical and antimicrobial studies of its stem extracts

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Outline

- Background
- Why this study?
- Methodology
- Results
- Conclusion

Background



Common names: spruce pine, cedar pine or walter pine.

Nature: Leaves are needle-like, the fruits about 1-2 inches smallish cones while the stems are slender and reddish

Background conts.

Location: Grows in hardwood forest and it is relatively shade tolerant

The *Pinaceae* family have revealed that the chemical constituents mostly terpenoids, flavonoids, phenols, steroids, fatty acids and fatty alcohols are present.^{[1] [2] [3]}

Extracts were found to possess bioactivities as anti-tumour, anti-hypertensive and antitussive agents.

Pinus glabra has been used to treat chronic rheumatism, catarrh and swollen testicles.^[4]

Background conts.

Increasing incidence of tuberculosis and rated second to HIV-AIDS by the World Health Organisation as a leading cause of death from infectious disease and increased resistance to drugs currently in use,^[5]there is therefore the need for alternative sources of drugs for the treatment of this disease.

Pinus glabra presents as a potential candidate for such drugs discovery. Concoctions derived from the plant have been used to treat cases of rheumatism, cough, piles and catarrh.



Why this study?

- Reliability on traditional medicine in developing countries
- The development of new pharmaceuticals research activities.
- Expansion of the spectrum of antibacterial agents from natural resources.
- Natural products of higher plants may give a new source of antimicrobial agents with possibly novel

Methodology

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Air-dried plant material at room temperature.

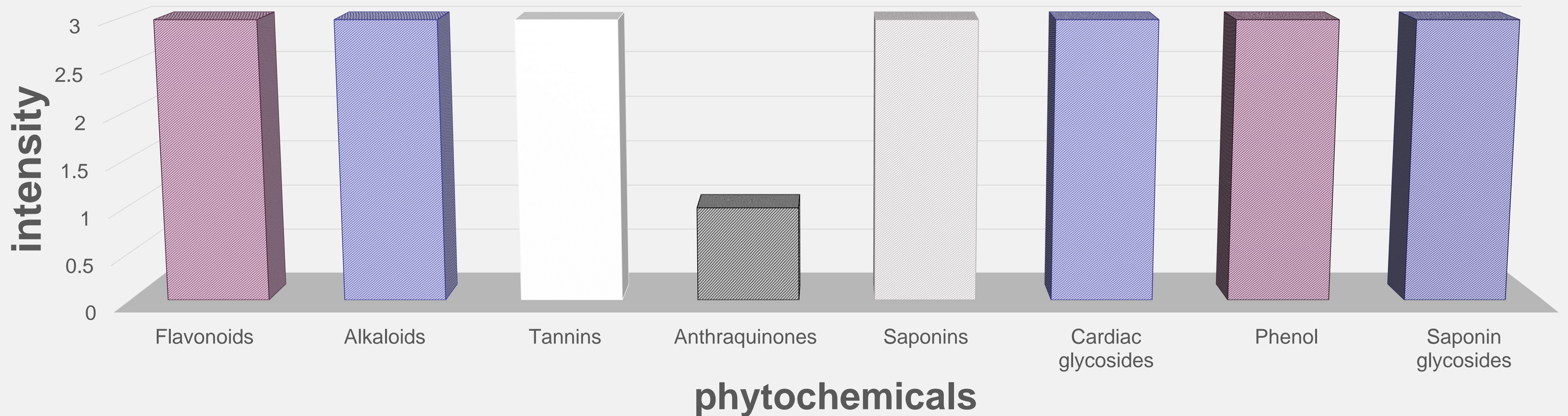
Cold extraction of plant material.

Removal of solvent under reduced pressure.

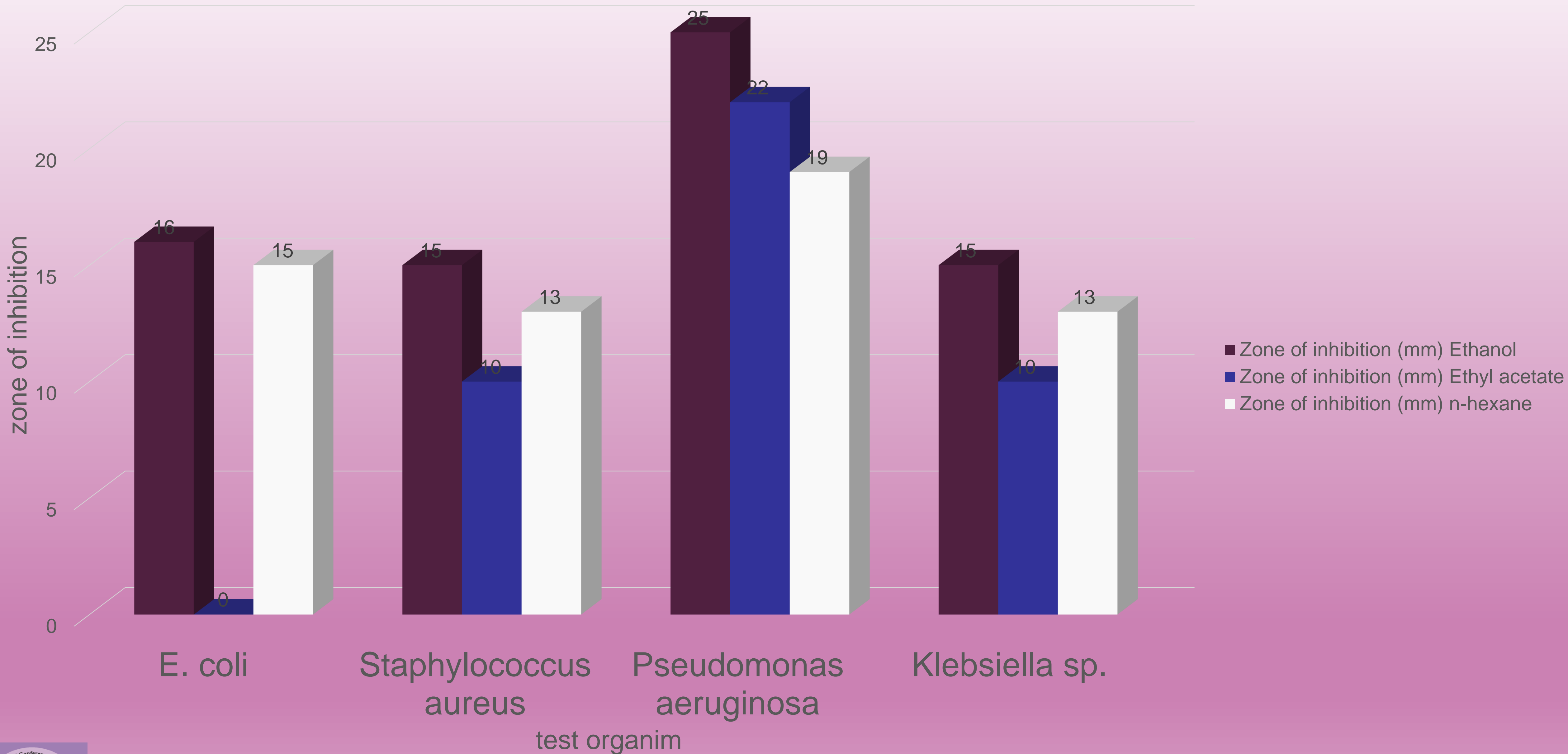
Fractionation of ethanolic crude extract in solvents of different polarities: chloroform, water, ethyl acetate & n-hexane.

Anti-microbial screening of fraction obtained at 5 mg/ml using Agar Diffusion while, phytochemical screening was done on the crude extract.

PHYTOCHEMICAL SCREENING OF EXTRACT



zone of inhibition for fractions obtained



In summary, the phytochemical screening which revealed the strong presence of secondary metabolites and the antimicrobial activities of the various fractions against selected bacteria shows that *Pinus glabra* is a potential candidate for the treatment of various ailments as has been reported for other members of this plant family.^[4]



Conclusion

The present results obtained will form the basis for selection of plant species for further investigation in the potential discovery of new natural bioactive compounds. Further studies which aimed at the isolation and structure elucidation of antibacterial active constituents from the plant have been initiated.



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