

## THUJA OCCIDENTALIS EFFECT ON GRAM-POSITIVE BACTERIA

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**Abstract:** The purpose of this work is to test the antimicrobial efficacy against Gram-positive bacteria represented by the following reference strains: *Streptococcus pyogenes* (ATCC 19615), *Staphylococcus aureus* (ATCC 25923), *Listeria monocytogenes* (ATCC 19114), *Bacillus cereus* (ATCC 10876) and *Clostridium perfringens* (ATCC 13124), as well as the MIC evaluation of three *Thuja occidentalis* (TO) extracts. In accordance with ISO 20776-1:2019, the evaluation was conducted by measuring the loss of microbial mass using spectrophotometry to determine the optical density (OD). As a result of our research, we can say that to extracts, especially at the first concentration tested cause an inhibiting effect on Gram-positive bacteria.



### • Introduction

Because of technological breakthroughs, plants' therapeutic characteristics have piqued many people's curiosity due to their low toxicity, pharmacological activity, and economic viability. Several studies have investigated the benefits of phytochemical compounds derived from plants and their effects on human health. Natural chemicals have recently sparked increased interest in the pharmaceutical industries for direct use or in combination with other molecules.

*Thuja occidentalis* (Cupressaceae), commonly planted as an ornamental tree in Europe, including Romania, is a coniferous tree native to Canada and North America. In traditional medicine, Thuja has been used to treat respiratory, urinary and reproductive system disorders.

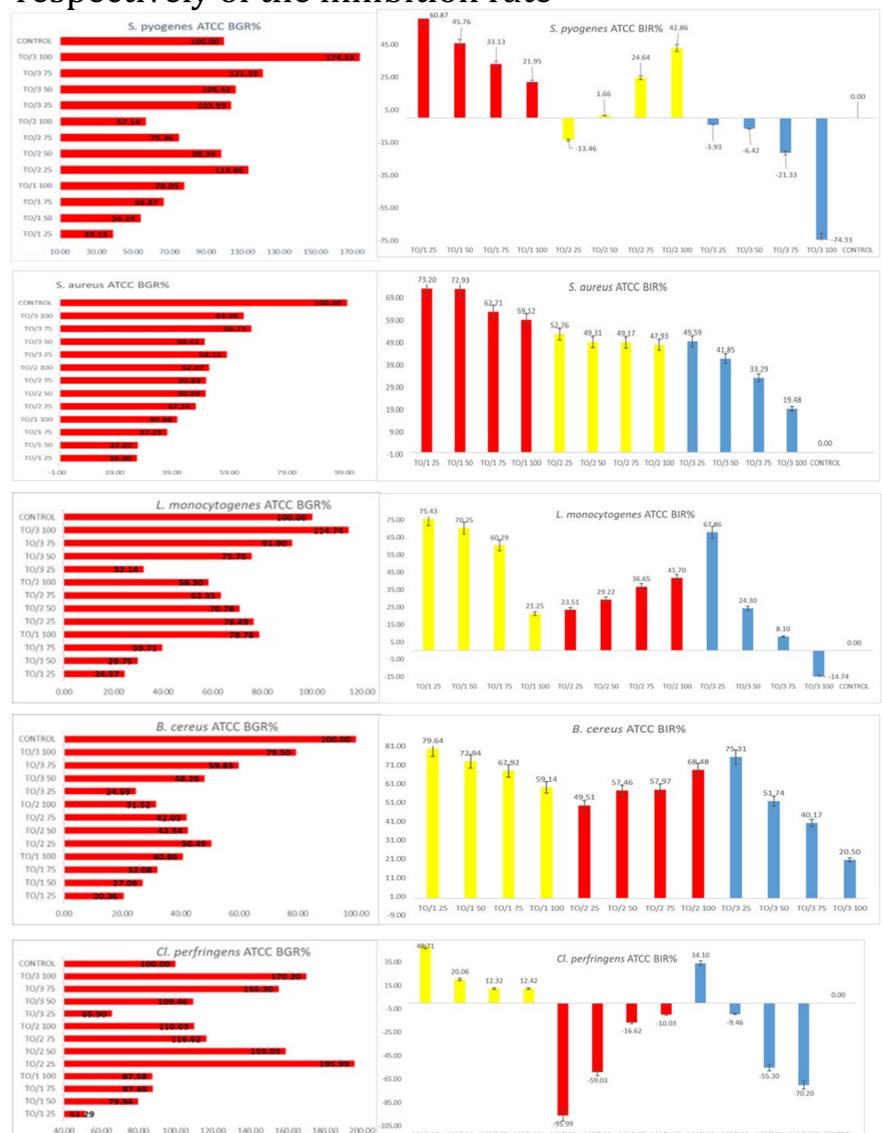
### • Material and method

The method of microdilution in broth, one of the basic methods of testing antimicrobial susceptibility, was performed to characterise the antimicrobial behaviour of *Thuja occidentalis* alcoholic extracts against Gram-positive bacteria.

Three types of plant extracts were tested: *Thuja occidentalis smaragd* (TO1), *Thuja occidentalis golden smaragd* (TO2) and *Thuja occidentalis fastigiata* (TO3).

### • Results and discussions

The results are presented as values of the growth rate respectively of the inhibition rate



### • Conclusions

The inhibitory effect on the Gram-positive bacteria is increasing: *Cl. perfringens* < *S. pyogenes* < *S. aureus* < *B. cereus* < *L. monocytogenes*. The demonstrated effect of TO2 recommends it as a potential future candidate in natural products with antimicrobial activity.