ABSTRACT

Biofilm embedded pathogens such as Staphylococcus spp., Escherichia coli, Pseudomonas aeruginosa, and Acinetobacter baumannii are difficult to eradicate and are major sources of bacterial re-infections. New drugs are needed to combat these pathogens. Hypericum is a plant genus that contains species known to have antimicrobial properties. However, the specific metabolites responsible for the antimicrobial properties are not entirely known, nor have these compounds been tested as inhibitors of biofilm development. This project was designed to test pure metabolites isolated from the species H. densiflorum, H. ellipticum, H. prolificum, and H. punctatum as inhibitors of bacterial growth & biofilm formation.

Hypericum metabolites included in this study:

Susceptibility testing. The minimum inhibitory concentrations (MIC) & minimum bactericidal concentrations (MBC) of seven Hypericum spp. metabolites were measured against A. baumannii, P. aeruginosa, E. coli, and clinical Staphylococcus spp. using Clinical Laboratory Standards Institute (CLSI) methods. MIC is the lowest concentration of an antimicrobial agent that results in no visible bacterial growth. MBC is the minimum concentration required to kill 99.9% of a bacteria inoculum.

Prevention of staphylococcal biofilm formation by metabolites from Hypericum spp. Pure metabolites from Hypericum spp. that demonstrated growth inhibitory properties against staphylococci were tested for their ability to prevent biofilm formation by planktonic S. aureus and S. epidermidis. Biofilm formation was quantified using a microtiter plate assay.

BACKGROUND

Hypericum prolificum

OBJECTIVES

Evaluate novel acylphloroglucinols as promising new antimicrobial agents against significant bacterial diseases.

Measure the in vitro growth and biofilm inhibitory properties of Hypericum spp. metabolites against the bacterial pathogens A. baumannii, P. aeruginosa, E. coli, S. aureus and S. epidermidis.

METHODS

Table 1. Antimicrobial activities of Hypericum metabolites. All values are reported in μg/mL.

RESULTS

CONCLUSION

REFERENCES


