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Antibiotic producers associated with the bark beetle Ips typographus

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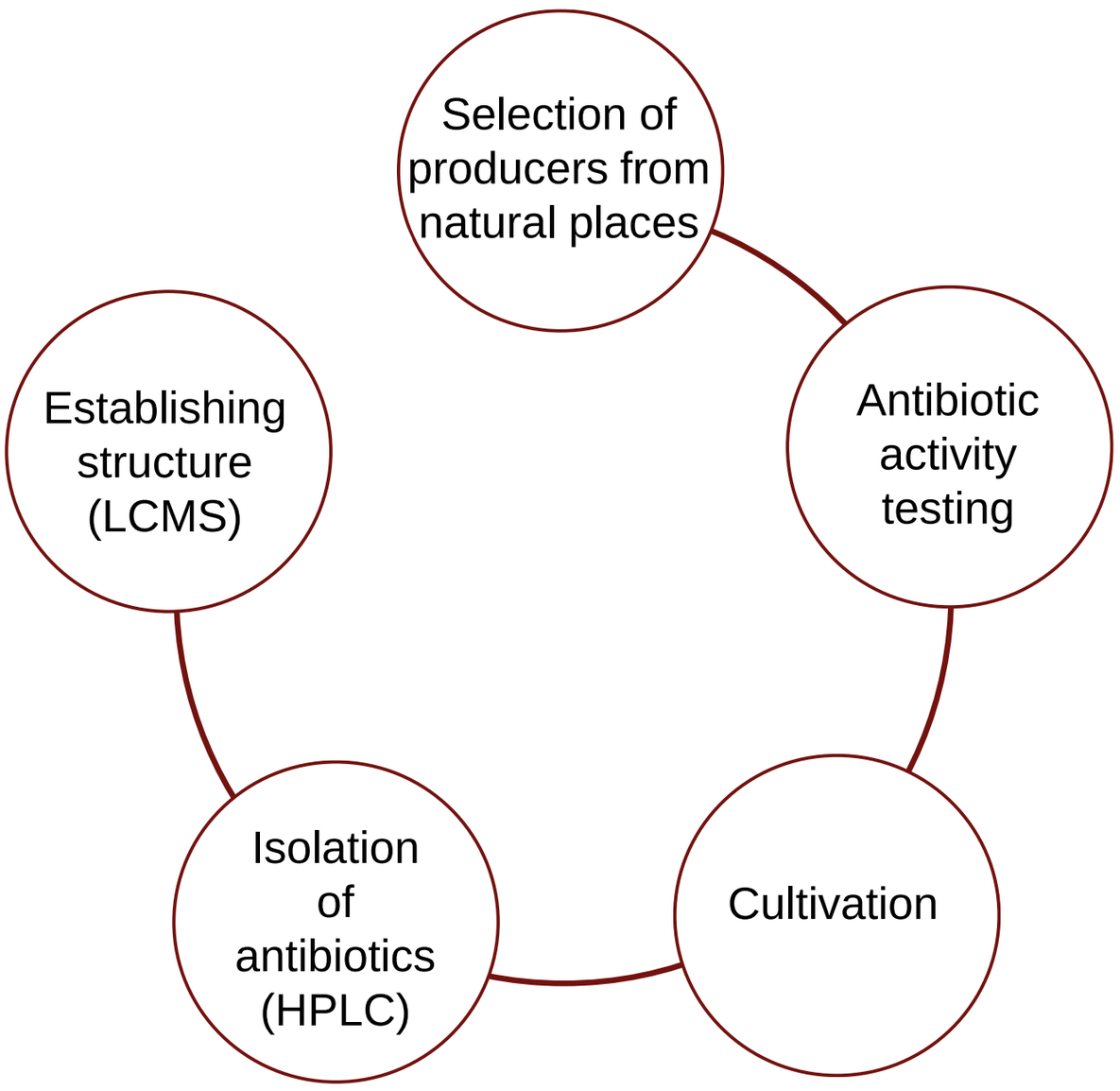
INTRODUCTION & AIM

The rapid development of antibiotic resistance has led to a constant search for and development of new antibiotic drugs. One way to search for antibiotics is to study microorganisms associated with insects. For example actinomycetes isolated as insect symbionts are producers of many antibiotics and antifungal drugs.

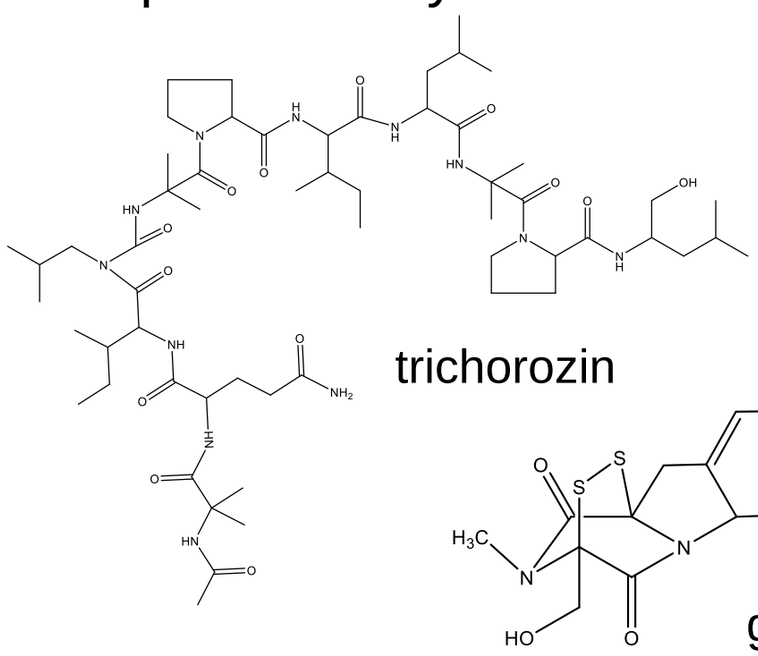
The aim of the study was to examine samples of the remains of the inner part of spruce bark that was fed on by the bark beetle typographus (Ips typographus).

METHOD

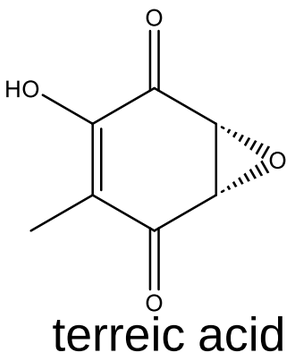


RESULTS & DISCUSSION

The production of the known antibiotics trichorozin and gliotoxin was observed for strain SK1-7. Trichorozin is a linear peptide belonging to the peptaibol class. The spectrum of activity of peptaibols is quite broad. Gliotoxin is a sulfur-containing mycotoxin that belongs to the class of natural 2,5-diketopiperazines with a broad spectrum of activity. The production of terreic acid, which is a covalent inhibitor of the bacterial cell wall biosynthetic enzyme UDP-N-acetylglucosamine 1-carboxyvinyltransferase, was produced by the strain SK3-18.



trichorozin



terreic acid

gliotoxin

CONCLUSION

We isolated three antibiotics: trichorozin, gliotoxin and terreic acid. Trichorozin, which has a wide activity, demonstrates potential in combating fungal infections resistant to traditional drugs. Gliotoxin exhibits immunomodulatory properties, which opens up new possibilities for combination therapy. Terreic acid has shown high efficacy against Gram-positive bacteria, which is interesting for the development of new antibacterial drugs.