Thermophilic *Bacillus licheniformis* MK027019 as a source of Germacrene-D and quinoline derivatives exhibiting antibacterial activity against multidrug-resistant bacteria

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INTRODUCTION

During studies aimed at discovering potent bioactives compounds, bacterial strain named LMB 3702 was isolated from Dbagh hot springs in Algeria and taxonomically identified as *Bacillus licheniformis* (Accession Number No.: MK027019). The secondary metabolism kept several attentions because they have been poorly understood until now compared with terrestrial phenomena (Yadav et al., 2015). Another reason is The ongoing demand for new chemotherapeutics to combat new illnesses and drug-resistant pathogens that are becoming a considerable threat to public health. The aims of the present work is to demonstrate the antibacterial potency of *Bacillus licheniformis* MK027019 isolated from Dbagh hot spring and elucidate the structure of bioactive metabolite.

Antibacterial assays

The antibacterial activity of crud extact of *Bacillus licheniformis* MK027019 was carried out against two multidrug resistant bacteria: *Pseudomonas aeruginosa* (NR_0754828.1), and Staphylococcus aureus NR_075000.1 using the RDA method as was described by Aissaoui et al. (2018).

GC-MS Analysis

The chemical compounds present in the crud extract were analyzed by GC–MS. using a Hewlett Packard Agilent 6890 plus system coupled directly to a 5973 MS.

Fig.1. Dbagh hot spring -Algeria (sample site).

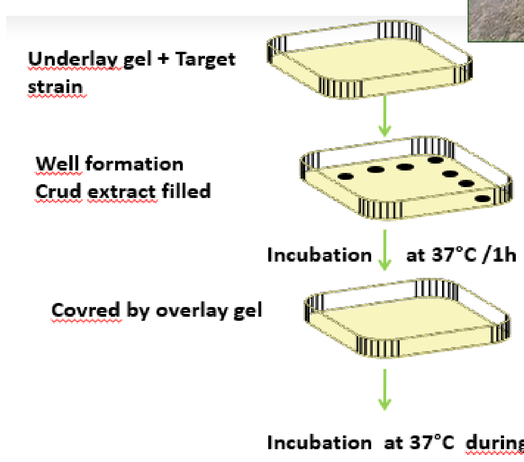
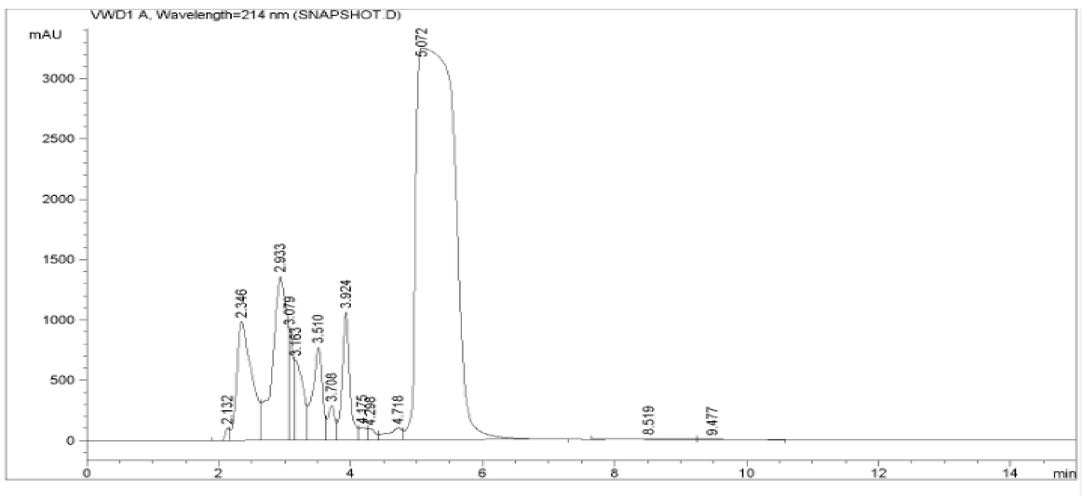


Fig.2brief scheme of the RDA method

Fig.3 Result of antibacteria activity against *P. aeruginosa* (NR_0754828.1)

Compounds composition



Compound name	Area (%)
Germacrene-D	14.70
Eicosane	12.13
Heneicosane	3.17
Hexadecanoic acid methyl ester	6.51
eicosanoic acid methyl ester	0.78
n-Tridecane	4.39
8-Phenyl-isoquinoline	3.51

Tabb. 1.Bioactive compounds identified in the crud extract from thermophilic *Bacillus licheniformis* using GC-MS .

CONCLUSION

The presence of Germacrene-D and quinoline derivative are significant in this finding. To our knowledge, these compounds have been detected first time in thermophilic *Bacillus licheniformis*.

This data demonstrate that the crud extract of thermophilic *Bacillus* represented unequivocally the high antibiotic potential. However, further works will be need to verify in-Vivo the cytotoxic effects and efficacies utility in clinical approaches.

ACKNOWLEDGEMENT

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GCMS analysis was realized in CRAPC Boussmail, Tipaza (Algeria).

References

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Yadav et al., 2015. Ann. Microbiol.