

# Chemical profile, antibacterial and cytotoxic activities of the Algerian *Cedrus atlantica* essential oil

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## INTRODUCTION

*Cedrus atlantica* (**Fig. 1**) is an endemic species of North Africa well known for its wood oil with traditional medicinal usages mainly for its anti-inflammatory and antibacterial properties. There was a lack of data on the other components.

This study aimed to investigate the essential oil of the cones chemically and biologically.



**Fig.1.** Original image of *Cedrus atlantica* in Akfadou forest (Adekar) (source of harvested cones)

## MATERIALS AND METHODS

### Isolation and Characterization

The essential oil was hydrodistilled from *Cedrus atlantica* cones.

The essential oil was analyzed using gas chromatography coupled with mass spectrometry (GC-MS).

### Biological Activities:

Antibacterial activity assessed on three bacterial strains (Gram-positive strains: *Staphylococcus aureus* ATCC 25923 and *Bacillus cereus* ATCC 11778); and (Gram-negative strain: *Escherichia coli* ATCC 25921).

Cytotoxic activity tested on MCF-7 breast cancer cell lines.

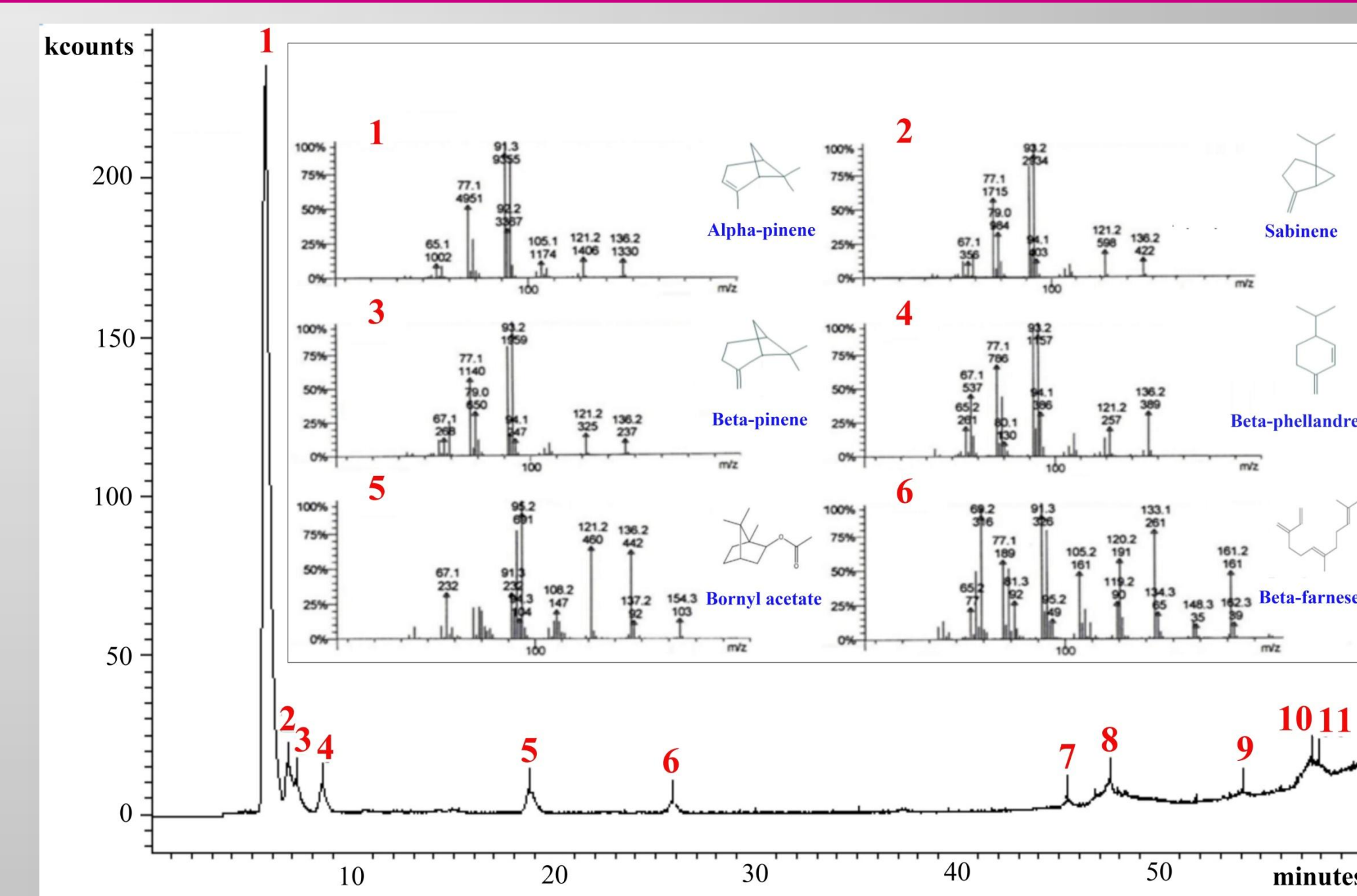
## RESULTS

The extraction yield of *Cedrus atlantica* essential oil was 0.41% v/w.

GC-MS revealed the presence of  $\alpha$ -pinene (81.49%) as the major constituent of the essential oil, followed by sabinene (3.21%),  $\beta$ -phellandrene (2.53%) and  $\beta$ -pinene (1.95%). Furthermore, the essential oil contained also a low amount of bornyl acetate (2.96%) with miscellaneous structure (**Fig. 2**).

*Staphylococcus aureus* appeared to be the most susceptible strain to *C. atlantica*'s oil, with a minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) values of 0.25 and 0.5% (v/v).

*C. atlantica*'s essential oil exhibited a potent activity against MCF-7 breast cancer cell line with an IC<sub>50</sub> value of 143.13±14.6  $\mu$ g/mL cytotoxic.



**Fig.2.** GC-MS chromatogram of the essential oil of *Cedrus atlantica* cones.

## CONCLUSION

The data presented in this study have demonstrated that *Cedrus atlantica*'s essential oil showed antibacterial, and anticancer activities. Thereby, the ethnobotanical use of *C. atlantica* in traditional preparations is worth to be investigated as the plant appears to be a potential source of interesting metabolites.