

Dedication

I dedicate this work to ...

My family ...

My teachers ...

Acknowledgement

Firstly praise to Allah who gave me health and patience to accomplish this work.

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Abstract

This study was done on Sudanese frankincense (olibanum) that belongs to the family *Burseraceae*, genus *Boswellia* and species *Boswellia papyrifera*.

In the study the essential oil was extracted, from sample collected from the local market, using direct steam distillation technique. Twenty five components of the extracted oil were identified using a gas chromatograph coupled to a mass spectrometer (GC-MS), the major constituent was found to be 2-ethyl hexyl acetate.

The water separated from the oil was also analyzed to identify the aromatic material soluble in it; it was extracted with different solvents and analyzed using IR and TLC techniques. The results, obtained, show that the aromatic smell of this water was due to solubility of a small amount of the oil.

The polymeric material remaining, after oil separation, was hydrolyzed in acidic medium to identify sugars that are included in its structure. The TLC technique employed to this purpose showed the presence of glucuronic acid, galactose and arabinose.

The study results show that Frankincense of Sudanese origin differs from that of Ethiopian origin of the same genus and species in the main component of its essential oil. Where as the main component of Ethiopian Frankincense is octyl acetate and constitutes 88%, it is 2-ethylhexyl acetate in the Sudanese one and it forms about 66%.

الخلاصة

أُجريت هذه الدراسة على عينة من لبان البخور المنتَج في السودان والذي ينتمي إلى عائلة البرازيات، جنس البوسويلاً ونوع البوسويلاً بابيرفيرا والتي جمعت من السوق المحلي.

في هذه الدراسة استُخلصَ زيت اللُّبان عن طريق التقطير البخاري المباشر وتم التعرف على مكوناته حيث أثبتت التحاليل باستخدام تقنية كروماتوغرافيا الغاز المقتربة بمطياف الكتلة وجود خمسة و عشرين مركباً كيميائياً ووجد أن مركب خلات-2- إيثيل هكسيل يمثل أعلى نسبة في تكوين الزيت.

تم أيضاً تحليل الماء المتقطر مع الزيت بعد فصلهما عن بعضهما حيث استُخلصَ الماء بمذيبات مختلفة. أثبتت تحاليل الأشعة تحت الحمراء و كروماتوغرافيا الطبقة الرقيقة أن كمية قليلة جداً من الزيت الذائب في الماء هي السبب في الرائحة الزكية الموجودة في هذا الماء.

أُجريت كذلك في الدراسة تحاليل على المادة الصلبة المتبقية من اللُّبان بعد فصل الزيت بغرض التعرف على السكريات الموجودة في تركيبها، حيث تمت حلماًة المادة البوليمرية في وسط حمضي. أوضحت كروماتوغرافيا الطبقة الرقيقة وجود السكريات الآتية؛ الجلاكتوز؛ الارابينوز وحمض الجلوكويورونيك.

بينت الدراسة وجود اختلاف بين لبان البخور ذي الأصل السوداني وذلك المنتج في إثيوبيا والذان ينتميان إلى نفس الجنس والنوع (بوسويلاً بابيرفيرا) من حيث نوعية المكونات ونسبتها في الزيت، ففي حين أن خلات الأوكثيل يمثل المكون الرئيسي لزيت لبان البخور ذي الأصل الأثيوبي ونسبة 88% أوضحت الدراسة أن مركب خلات-2- إيثيل هكسيل هو المكون الرئيسي لزيت لبان البخور السوداني ونسبة 66%

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