



Phytochemical and Biological Studies of genus  
*Olibanum* Family Burseraceae, which was introduced  
into Egypt for folk medicine.

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By

**Asmaa Ibrahim Ali**  
B. Pharm. Sci. (2004)  
Faculty of Pharmacy  
Misr International University.

**Department of Pharmacongosy**  
**Faculty of Pharmacy**  
**Ain Shams University**  
**Cairo, Egypt.**  
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 Under the Supervision

of

**Professor. Dr. Abdel Nasser Badawi Singab**

Professor. Dr. of Pharmacognosy

Vice Dean for the Society Service Affairs &

Environmental Development

Faculty of Pharmacy

Ain Shams University.

***Dr. Khaled Meselhey Ibrahim***

Lecturer of Pharmacognosy

Faculty of Pharmacy

Cairo University.

**Department of Pharmacongosy**

**Faculty of Pharmacy**

**Ain Shams University**

**Abbassya, Cairo, Egypt**

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## ABBREVIATIONS

<b>ABA</b>	Acetyl Boswellic Acid
<b>AKBA</b>	Acetyl Keto Boswellic Acid
<b>ALP</b>	Alkaline phosphatase enzyme
<b>ALT</b>	Alanine transminase enzyme
<b>AST</b>	Aspartate transminase enzyme
<b>BA</b>	Boswellic Acid
<b>BSE</b>	<i>Boswellia serrata</i> Extract
<b>b.w t.</b>	body weight.
<b>CC</b>	Column Chromatography
<b>CYP</b>	Cytochrome P450
<b><sup>13</sup>C-NMR</b>	<sup>13</sup> C Nuclear Magnetic Resonance.
<b>d</b>	doublet
<b>DMSO</b>	Dimethylsulfoxide
<b>ED</b>	Extraction followed by distillation
<b>FA</b>	Fatty acid
<b>FAB MS</b>	Fast Atom Bombardment Mass Spectrometry
<b>FAME</b>	Fatty Acid Methyl Ester.
<b>FID</b>	Flame Ionization Detector.
<b>FAME</b>	Fatty Acid Methyl Ester
<b>G<sub>0</sub></b>	Glucose level at zero time.
<b>GC</b>	Gas Chromatography
<b>Gc</b>	Glutathione level in control rats.
<b>GC/MS</b>	Gas Chromatography coupled by Mass Spectrum
<b>GLC</b>	Gas Liquid Chromatography
<b>Gt</b>	Glutathione level in treated rats.
<b>G<sub>t</sub></b>	Glucose level at certain time after administration.
<b>HC</b>	Hydrocarbon
<b>HD</b>	Hydro distillation
<b><sup>1</sup>H-NMR</b>	<sup>1</sup> H Nuclear Magnetic Resonance.

<b>HPLC</b>	High Performance Liquid Chromatography
<b>HPTLC</b>	High Performance Thin Liquid Chromatography
<b>IA</b>	Incensole Acetate.
<b>IN</b>	Incensole.
<b>J-value</b>	Coupling constant
<b>KBA</b>	Keto Boswellic Acid
<b>KI</b>	Kovat's Index
<b>L<sub>0</sub></b>	Liver enzymes at zero time.
<b>LD<sub>50</sub></b>	Median Lethal Dose
<b>L<sub>t</sub></b>	Liver enzymes at certain time after administration.
<b>m.p.</b>	Melting Point
<b>Mc</b>	Mean oedema in control rats.
<b>Mol. wt.</b>	Molecular weight.
<b>Mt</b>	Mean oedema in treated rats.
<b>NF</b>	Nuclear Factor
<b>R<sub>f</sub></b>	Retardation factor
<b>R<sub>t</sub></b>	Retention time
<b>SFE</b>	Super Critical Fluid Extraction
<b>SPME</b>	Solid Phase Micro Extraction
<b>Spp.</b>	Species
<b>T<sub>0</sub></b>	The rectal temperature at zero time
<b>TLC</b>	Thin Layer Chromatography
<b>T<sub>t</sub></b>	The rectal temperature at interval time of administration.
<b>USM</b>	Unsaponifiable matter
<b>UV</b>	Ultra Violet
<b>+Ve.</b>	Positive.
<b>- Ve.</b>	Negative.
<b>V<sub>0</sub></b>	The minimal voltage at zero time.
<b>VLC</b>	Vacuum Liquid Chromatography
<b>V<sub>t</sub></b>	The minimal voltage at certain time interval.

# *Introduction*

## Introduction

Frankincense is a generic name for the oleogumresin and tree of approximately 25 different known *Boswellia* species. Frankincense is also commonly known as "Olibanum", or "Oil of Lebanon" from the Arabic word for the resin, "Laben" or "Luban" which is a word that also means "white" or "cream."

Burseraceae comprises 18 genera and about 540 species of flowering plants, also known as the incense tree family. The family includes trees and shrubs, native to tropical regions of Africa, Asia, and the Americas. Some members of the family produce fragrant resins used as incense or perfume, most notably frankincense and myrrh.

*Boswellia* species are small trees that grow wildly and prefer moist climates. Frankincense is used as anti-inflammatory in many cultures and fast becoming popular in the West for such treatments. Frankincense is traditionally used as antiseptic, anti-inflammatory and as expectorant to those suffering from asthma. It has been used extensively as an antibacterial and antifungal treatment for mature skin and acne and to heal wounds and scars. Certain phytochemical and biological studies were carried out on certain species of *Boswellia* such as anti-inflammatory effect, anticancer, immunomodulatory, hepatoprotective, antidiabetic and antibacterial.

On the other hand, certain phytochemical and biological studies were carried out on *Boswellia carterii* Birdwood (Somalia), (Bursereaceae) [Dwujejua, M.; et al (1993), Jing, Y.; et al (1992, 1993, 1999), Qi, Z.; et al (1999), Hussein, G.; et al (2000), Liu, X.; Qi, Z. H. (2000), Badria, F.A.; et al (2003), Chevrier, M. R.; et al (2005), Fan, A. Y.; et al (2005), Hamm, S.; et al (2005), Akihisa, T.; et al

## **Introduction.**

(2006), Banno, N.; *et al* (2006), Frank, A.; Unger, M. (2006), Buchele, B.; *et al* (2006), Camarda, L.; *et al* (2007), Lu, M.; *et al* (2008), Yuan, H. Q.; *et al* (2008), Frank, M. B.; *et al* (2009)], It was deemed of interest to prove the phytochemical and biological studies of this unorganized drug.

### **Aim of work:**

Although there are certain reported studies on *Boswellia* species, little was carried out on *Boswellia carterii* Birdwood (Somalia), (Bursereaceae) relative to other species. So, it is deemed of interest to investigate the mechanism of their medicinal uses as well as the phytoconstituents of the unorganized product including oleoresin, essential oil, resin & gum.

### **The present work includes:**

1. Literature survey.
2. Collection & authentication of the drug under investigation.
3. Phytochemical screening of the Olibanum.
4. Investigation of the lipoidal matter.
5. Study of the chemical composition of volatile oil by GC/MS analysis.
6. HPLC analysis of the gum.
7. Isolation & identification of the isolated compounds from the resin by spectroscopic analysis.
8. Biological screening of the different extracts & fractions of the unorganized product to ascertain their activities.