

Boswellin®

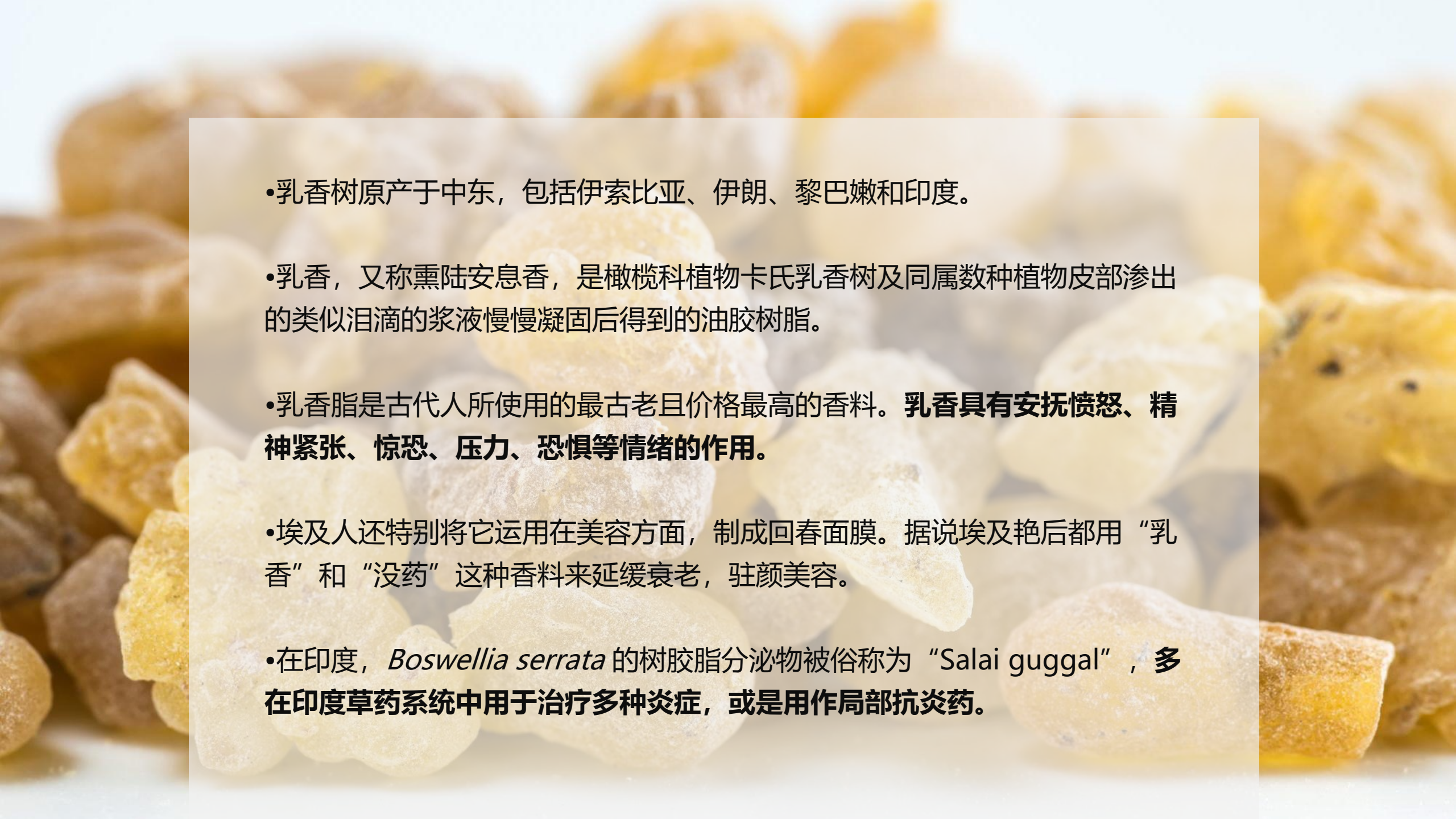
齿叶乳香树脂提取物

- 最上乘的乳香树脂来源
- 核心关键成分：β-乳香酸，AKBBA
- 抗炎，舒敏修复 & 眼周护理，抗衰老

www.bioswellin.com

BOSWELLIN®

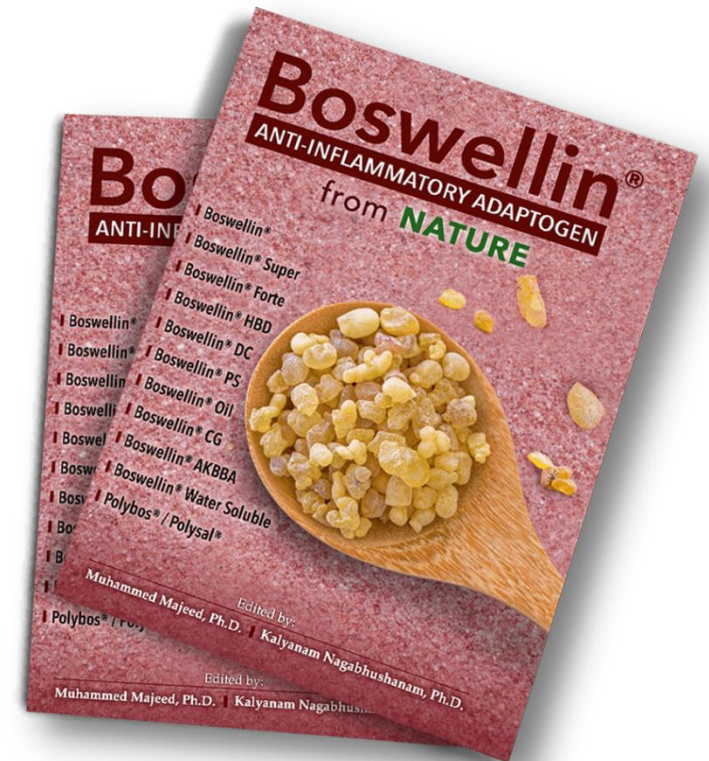


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- 乳香树原产于中东，包括伊索比亚、伊朗、黎巴嫩和印度。
 - 乳香，又称熏陆安息香，是橄榄科植物卡氏乳香树及同属数种植物皮部渗出的类似泪滴的浆液慢慢凝固后得到的油胶树脂。
 - 乳香脂是古代人所使用的最古老且价格最高的香料。**乳香具有安抚愤怒、精神紧张、惊恐、压力、恐惧等情绪的作用。**
 - 埃及人还特别将它运用在美容方面，制成回春面膜。据说埃及艳后都用“乳香”和“没药”这种香料来延缓衰老，驻颜美容。
 - 在印度，*Boswellia serrata* 的树胶脂分泌物被俗称为“Salai guggal”，**多在印度草药系统中用于治疗多种炎症，或是用作局部抗炎药。**

Sabinsa对乳香的研究



SABINSA迄今为止已经出版了4本关于乳香树脂提取物的专业书籍，最新一本为2020年出版，全面介绍了Sabinsa 的乳香规格以及其抗炎的健康功效



乳香中的成分

- ✓ 萜精油 (5-9%)
- ✓ 醚类可溶成分 (醇类、 酯类、 乳香酸; 60-70%)
- ✓ 醚类不可溶成分 (多糖类25-30%)

Boswellin® 提取其中的乳香酸成分

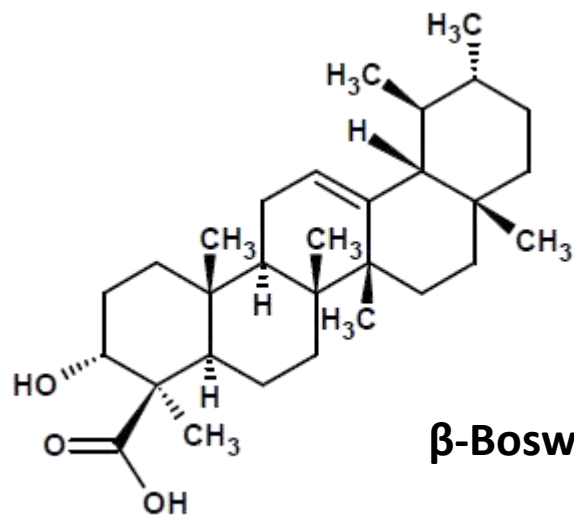
乳香中含有的 β 乳香酸，如下：

- β -乳香酸
- 乙酰基- β -乳香酸
- 11-酮基- β -乳香酸
- 乙酰基 -11 -酮基- β -乳香酸

其中，Boswellin® 中含有的 β -乳香酸和乙酰基 -11 -酮基- β -乳香酸 (AKBBA)是抑制炎症因子最有效的成分

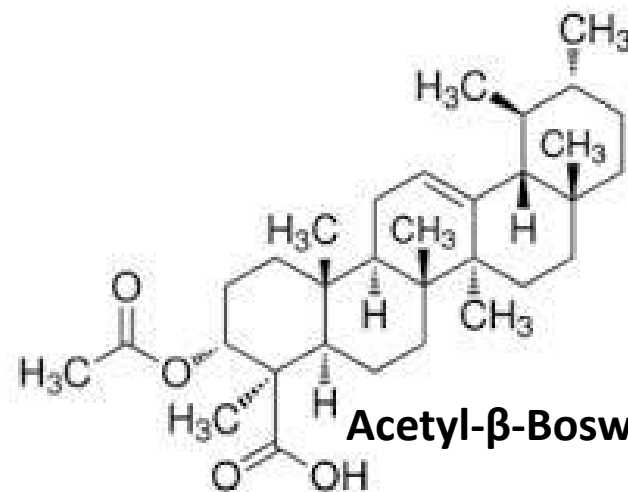


β -乳香酸结构



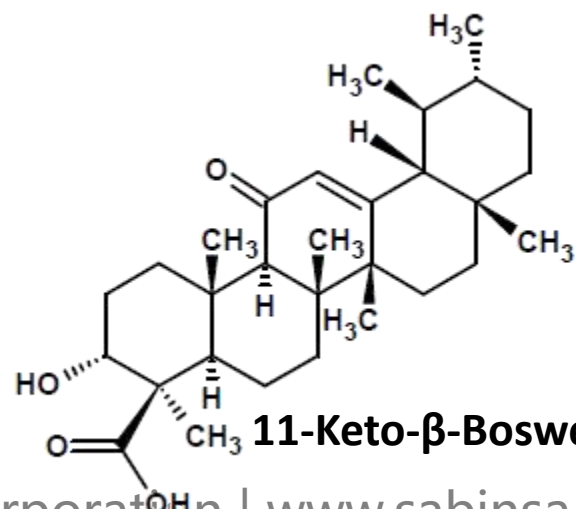
β -Boswellic Acid

BBA



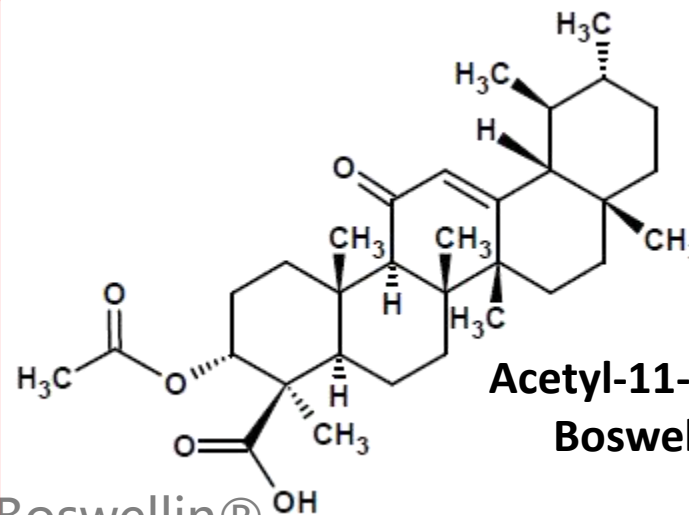
Acetyl- β -Boswellic Acid

ABBA



11-Keto- β -Boswellic Acid

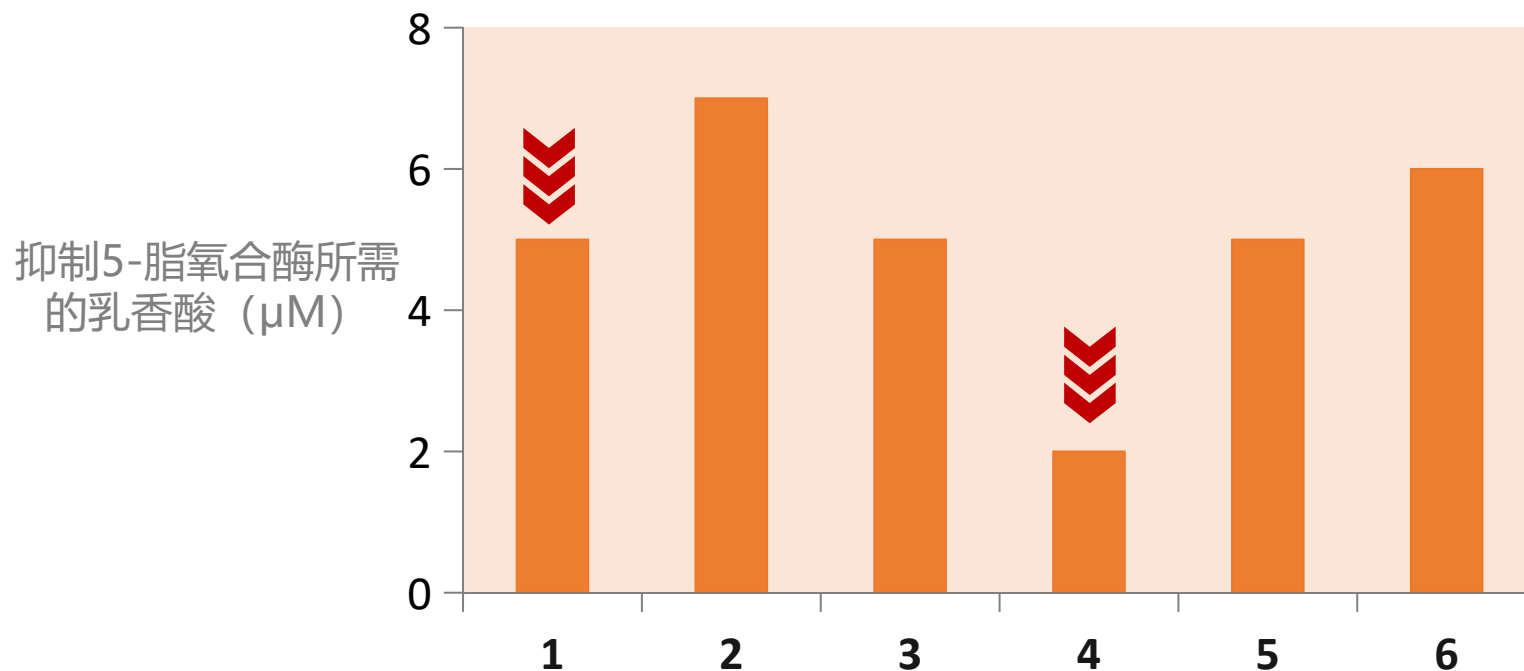
KBBA



Acetyl-11-Keto- β -
Boswellic Acid

AKBBA

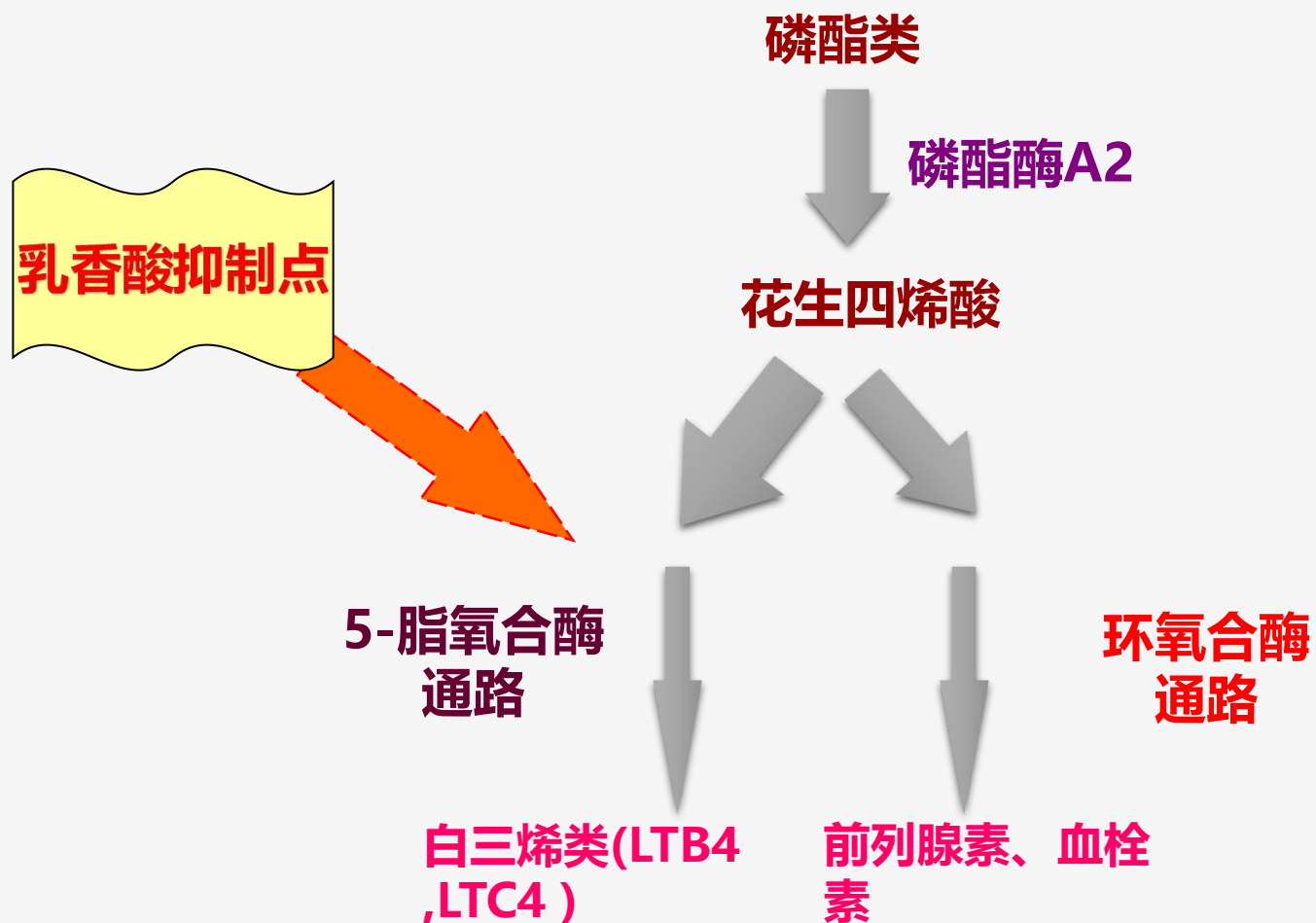
不同结构乳香酸抑制5-脂氧合酶作用



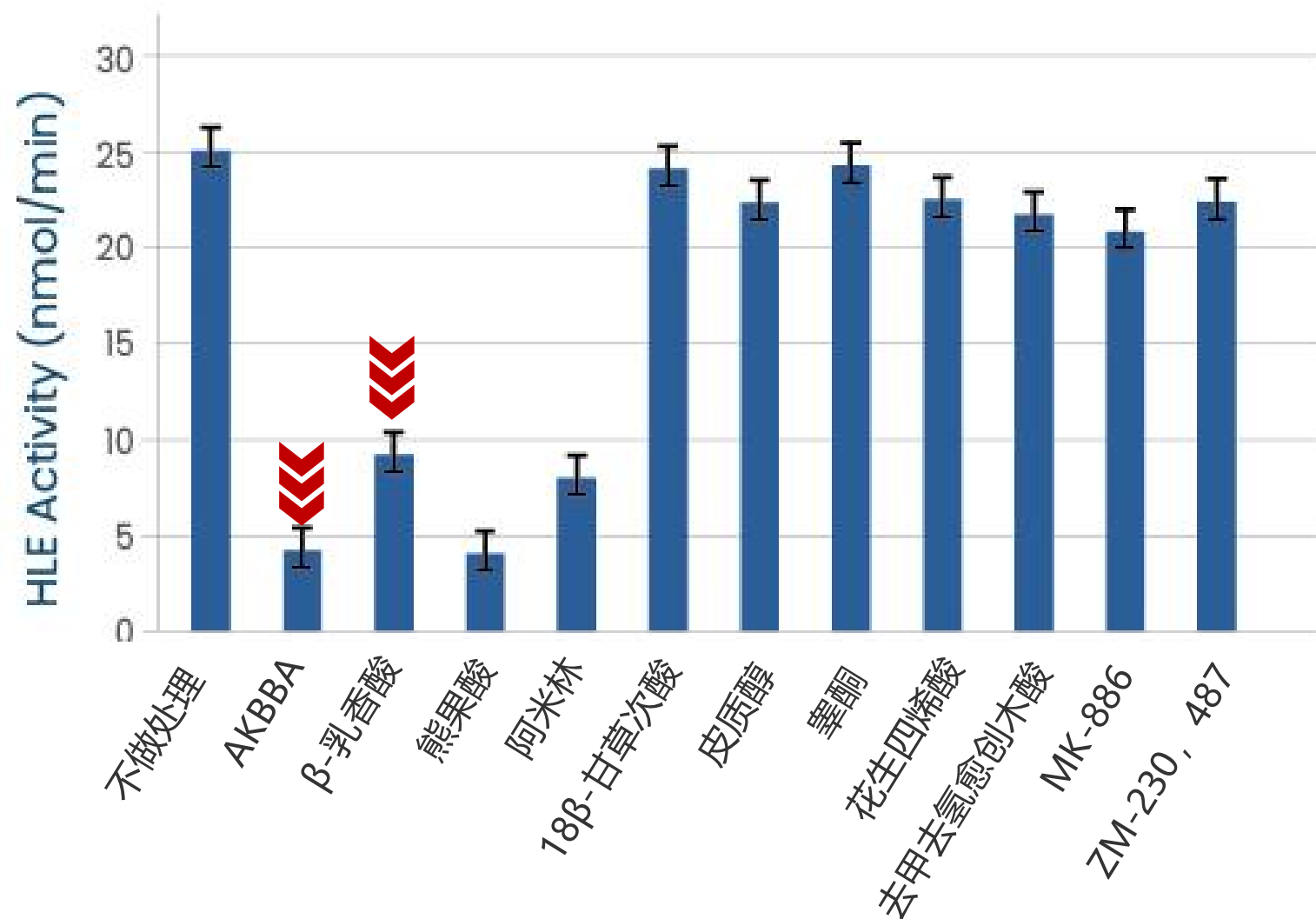
1.	β-乳香酸	4.	乙酰基-11-酮基-β-乳香酸
2.	乙酰基 -β-乳香酸	5.	α-乳香酸
3.	11-酮基-β-乳香酸	6.	乙酰基- α-乳香酸

乳香酸双重抗炎功效

乳香还可以抑制白细胞弹性蛋白酶



乳香酸抑制白细胞弹性蛋白酶



β-乳香酸和AKBBA抑制HLE活性的作用显著



SAMI-SABINSA
GROUP

Boswellin® CG 乳香提取物

来源：齿叶乳香树/树胶脂分泌物

INCI：齿叶乳香数值提取物

有效成分：β-乳香酸, AKBBA

相关医药用途：在传统的阿育吠陀医学中治疗炎症反应

添加量：0.5-2%

使用方法：加入油相，高温加热，参与乳化

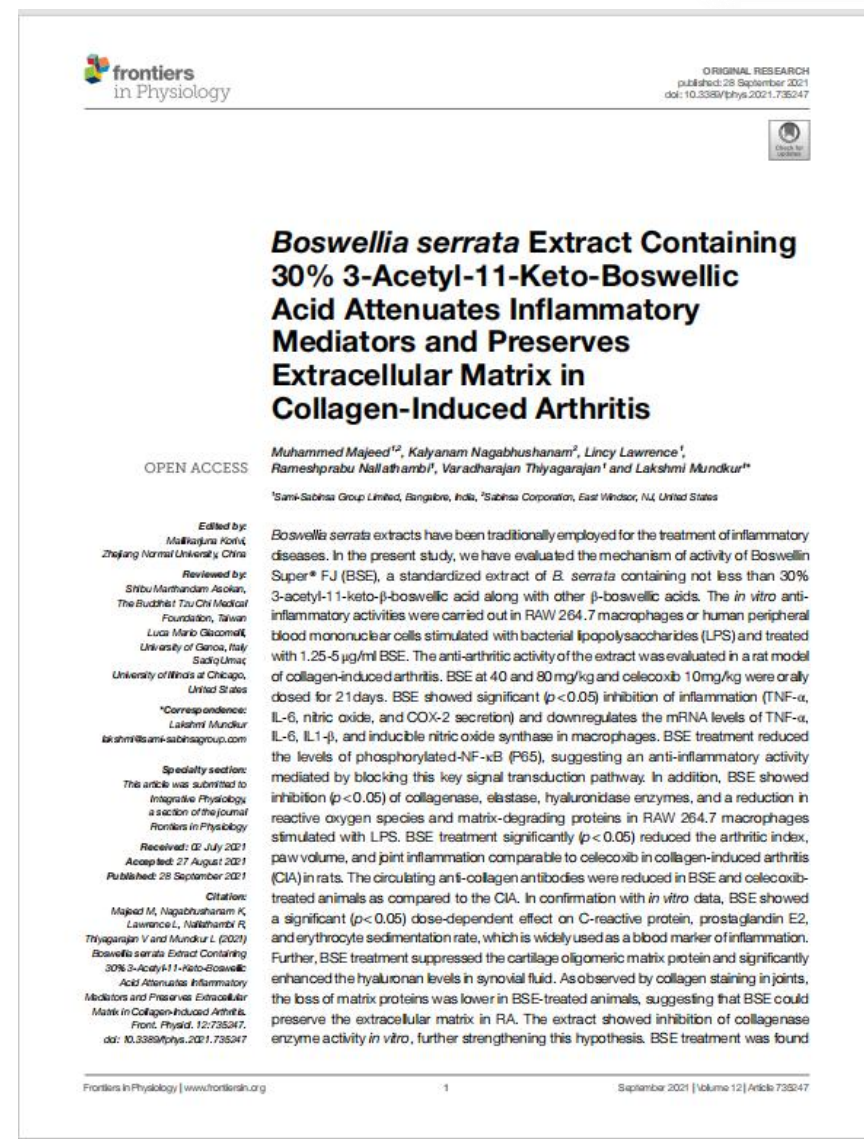
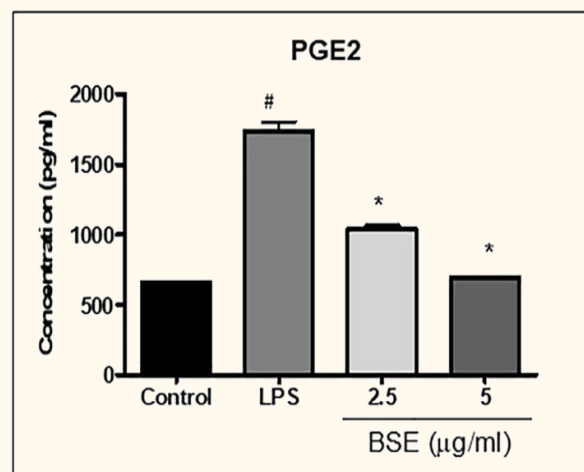
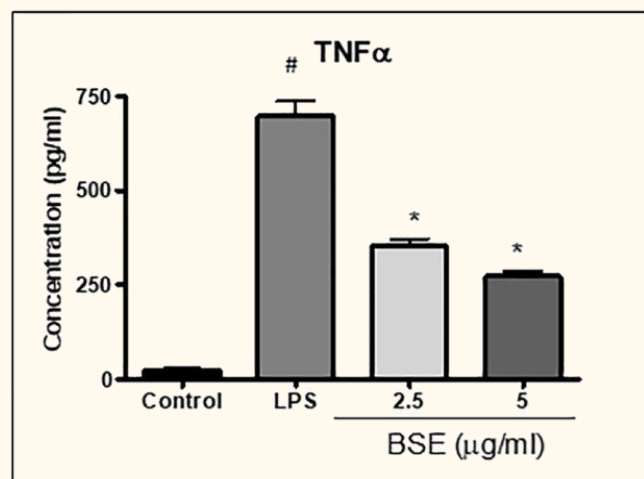


抗炎是核心

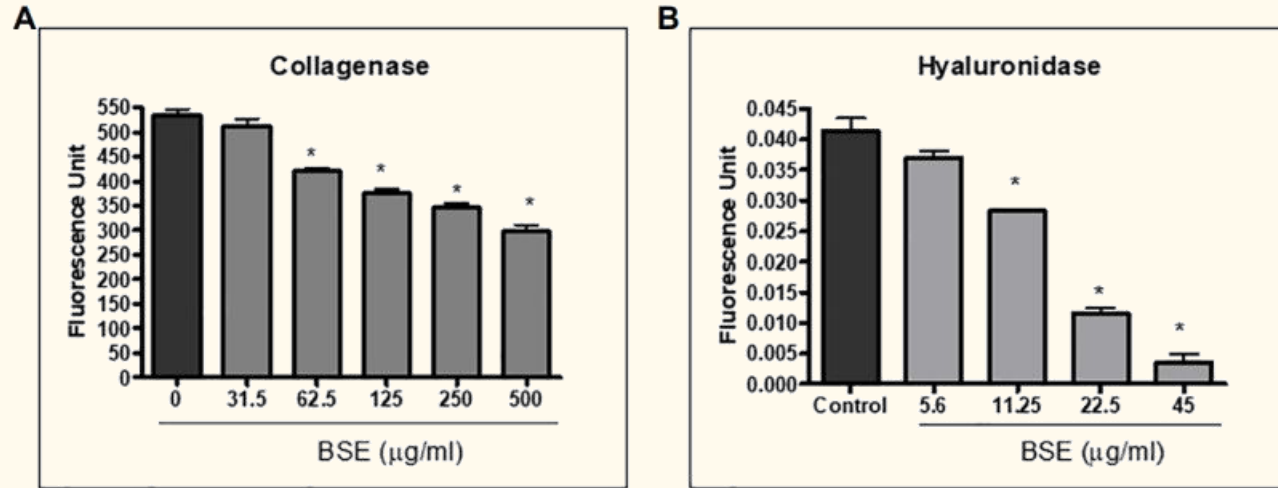


Boswellin® 乳香抗炎、抑制酶活性 (动物实验)

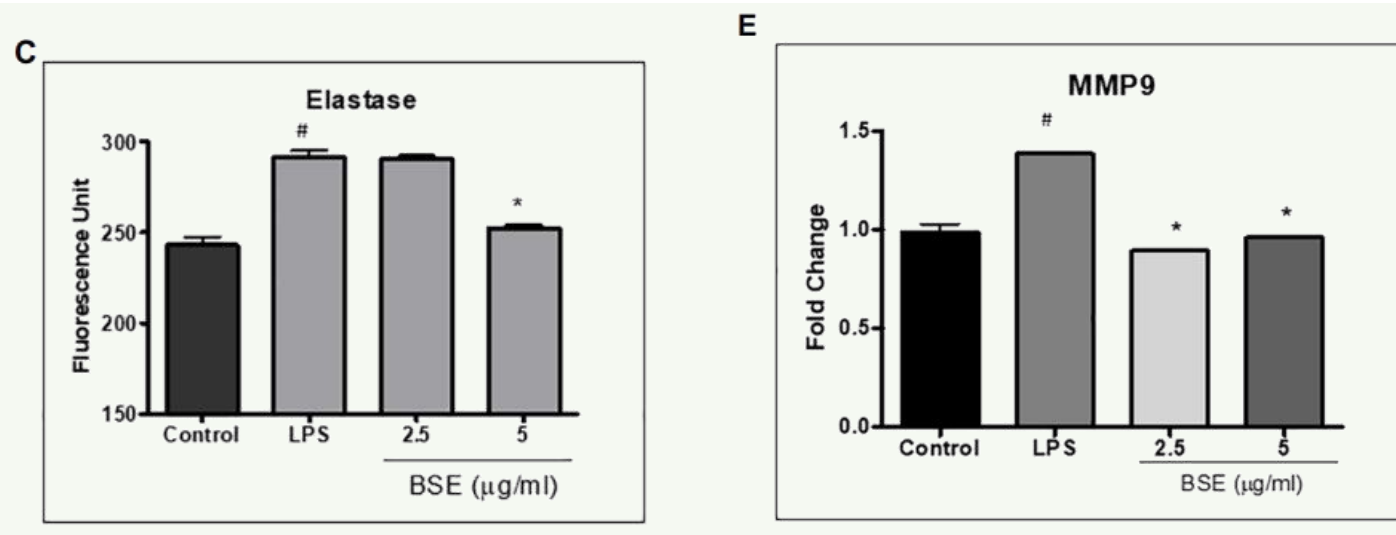
- 关节炎模型， LPS诱导关节炎， 研究乳香提取物的抗炎作用
- **Boswellin® 乳香抑制PEG2， TNF- α ， IL-2等关键炎症因子**



Boswellin® 抑制破坏酶活性



➤ **Boswellin® 乳香抑制胶原蛋白酶、透明质酸酶、弹性蛋白酶和金属蛋白酶活性，减少细胞外基质降解**

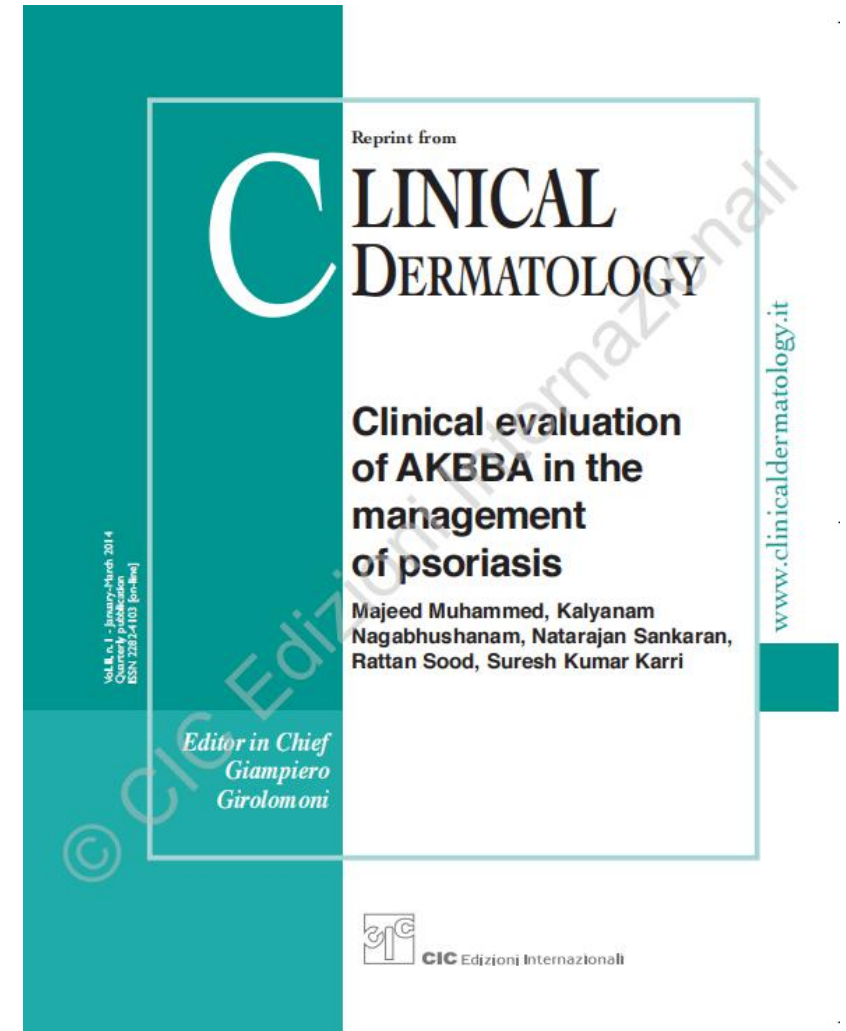


Boswellia serrata Extract
Containing 30% 3-Acetyl-11-Keto-Boswellic Acid Attenuates
Inflammatory Mediators and
Preserves Extracellular Matrix in
Collagen-Induced Arthritis

Boswellin® 对牛皮癣（银屑病）的作用（临床）

银屑病是一种常见的慢性炎症性、免疫介导的疾病，主要影响皮肤和关节，其特征是带有银白色鳞屑的局限性红色增厚斑块。

- 一项开放的、多中心的 三期临床试验评价AKBBA对于200名银屑病患者中的作用
- AKBBA 95% 含量 5%的乳霜，每天三次
- 评估：对于关键因子如VEGF和PGE2等的前后变化，以及银屑病严重指数（PASI评分）



Boswellin® 对牛皮癣（银屑病）的作用（临床）



- AKBBA 乳霜可以显著降低PASI打分，**减轻银屑病的严重程度**
- 左侧为测试前后皮肤对比图片



Clinical evaluation of AKBBA in the management of psoriasis

Boswellin ® 口服/外用治疗皮肤增生性问题（银屑病专利）



US Patent 7,582,314
Boswellin ® 外用配方

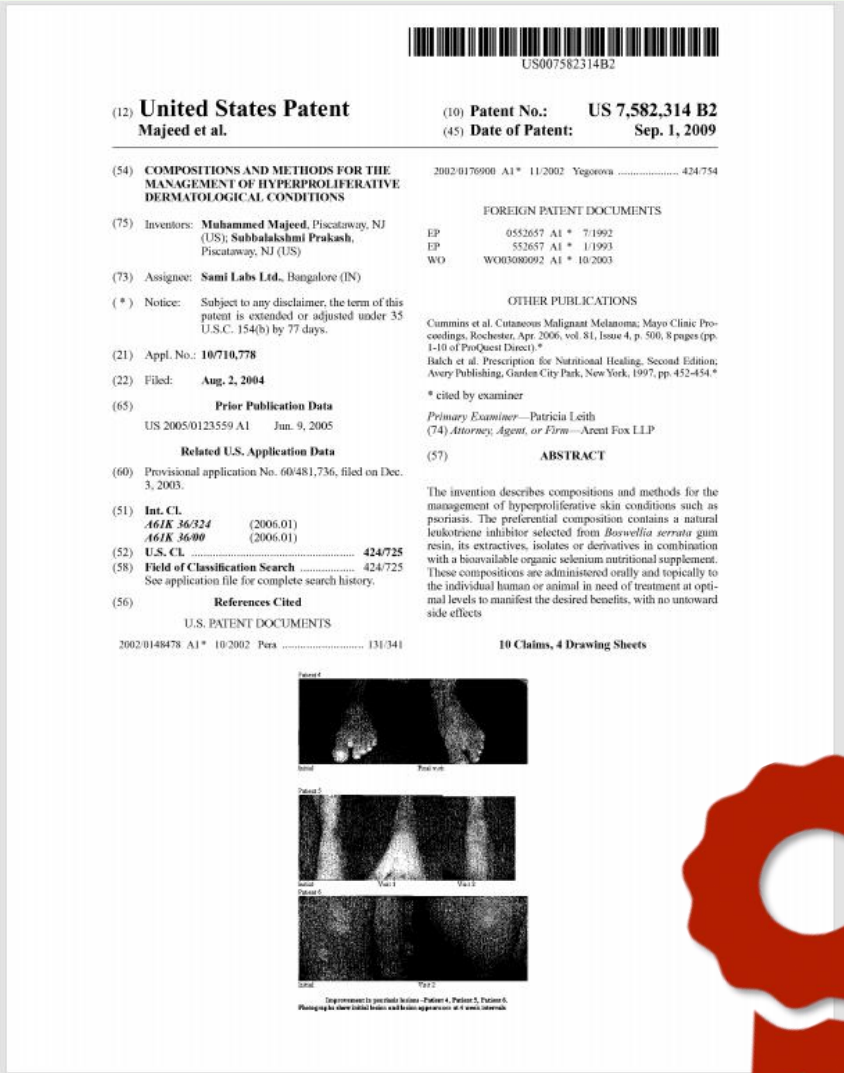
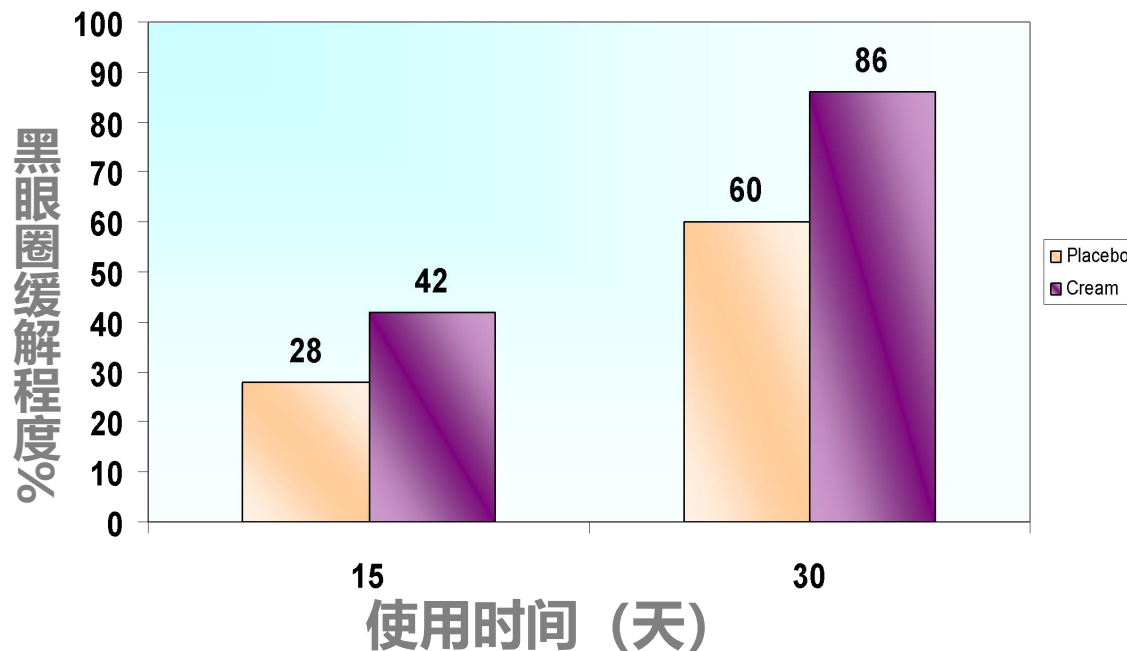


TABLE 2	
Composition of the topical cream	
Ingredient	% (w/w)
Purified water	60.000
Carbomer 940	0.250
Glycerin	4.000
Methylparaben	0.200
Edetate sodium	0.010
Cetyl alcohol	3.500
Stearyl alcohol	3.500
Stearic acid	6.500
Glyceryl stearate	2.500
PEG-100 stearate	2.500
Isopropyl palmitate	6.000
Vitamin E acetate	1.000
Dimethicone	0.100
Propylparaben	0.100
Vitamin A Palmitate	0.100
Ascorbyl palmitate	0.200
BOSWELLIN	5.000
Purified water	2.000
Triethanolamine	0.400
Imiduria	0.300

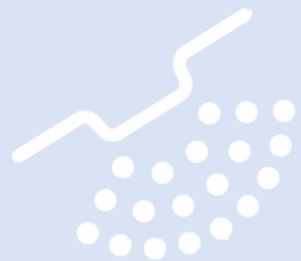
乳香对眼部的护理



该试验采用双盲安慰对照设计，以21位年龄在20-35岁之间的健康女性为受试者，分别使用含**1%乳香提取物**的眼霜和不含眼霜的安慰剂，分别涂抹于双眼下方，每日2次，坚持4周。

结果显示乳香能够明显改善黑眼圈症状。

Boswellin® 乳香提取物护肤



修复舒敏

- 抑制炎症因子
- 缓解瘙痒
- 治疗牛皮癣



抗衰老

- 减少胶原流失
- 对抗炎症性衰老



眼周护理

- 减少黑眼圈
- 缓解眼袋

Boswellin® 安全性

通过乳香提取物的急性毒性研究和90天亚慢性毒性研究来评估其在体内毒性。

急性口服毒性和亚慢性毒性研究表明，乳香提取物在2000mg/kg/天(观察14天)和600mg/kg/天(观察90天)时对动物不致命。

因此，这些数据提供了测试的乳香没有细胞毒性和无致突变性的证据。

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Mutagenic, Genotoxic and Sub Chronic Oral Safety Analysis of *Boswellia Serrata* Extract (Boswellin® Super)

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ABSTRACT

Boswellia serrata is a branching tree found abundantly in India. Boswellic acids extracted from resin of plant is used in inflammatory conditions, arthritis and hyperlipidaemia. However, any supplement used for long term use needs to be tested for potential mutagenicity and toxicity. Thus, we assessed the mutagenicity of *Boswellia serrata* extract by Mammalian Bone Marrow Chromosome Aberration Test and Mammalian Bone Marrow Micronucleus Test and in vitro Bacterial Reverse Mutation Test. Further we assessed in vivo toxicity by acute toxicity study and 90 days sub chronic toxicity study of *Boswellia serrata* extract. None of the mutagenic assays showed any increase in mutagenicity above background. Also, the acute oral toxicity and sub chronic toxicity study revealed that *Boswellia serrata* extract was not lethal to animals up to 2000mg/kg/day when observed for 14 days and 600mg/kg/day when observed for 90 days. Therefore, these data provide evidence that the *Boswellia* tested have no cytotoxic potency and are not mutagenic. Thus, our findings contribute to the risk assessment of preparations containing *Boswellia serrata* extract.

Keywords: *Boswellia serrata* extract, Mutagenicity, toxicity, Ames test, genotoxicity

INTRODUCTION

In Ayurvedic system of medicine, *Boswellia serrata* is one of the ancient and most appreciated herbs¹. *Boswellia serrata* is a branching tree found abundantly in the dry regions of India, Africa and Middle East. Traditionally resin which is available under the bark of the tree, is used in various religious and socio-cultural activities as incense and also in various therapeutic purposes²⁻³. Resin, gum, essential oils and terpenoids are the reported chemical constituents of the exudate⁴. Boswellic acid, medicinally important terpenoids makes up 25-35% of the resin⁵⁻⁶. Boswellic acids are pentacyclic triterpenes, which may exist in an a-configuration (geminal methyl groups at C-20) or a bb configuration (vicinal methyl groups at C-19/C-20). Furthermore, boswellic acids may contain an oxo-moiety at C-11 and an acetyl moiety at the C-3 OH group¹⁰.

Boswellia serrata extract (BSE) has been stated to have analgesic and psychopharmacological effect from the non-phenolic extract and the alcohol extracted portion is effective in management of inflammatory conditions, arthritis and hyperlipidaemia¹¹. The major effect

of the BSE is attributed by two boswellic acids namely 11-keto- β -boswellic acid (KBA) and acetyl-11-keto- β -boswellic acid (AKBA). The European Pharmacopoeia 6.0 includes these two boswellic acids as markers to confirm the quality of the air-dried gum resin exudate of *B. serrata*¹². Further, β -boswellic acid, 11-keto- β -boswellic acid and acetyl-11-keto- β -boswellic acid have been used in apoptosis of tumor cells, specifically affected by leukemia or colon cancer⁹.

Though there are several studies on efficacy of *Boswellia serrata* on various indications, safety studies of the extract are very few or inadequate. Also, *Boswellia serrata* extract is usually intended for long term use so potential cytotoxic, genotoxic or mutagenic activity testing of the extract is important. Further, mutagenicity tests help to reduce the genetic or carcinogenic hazards to humans as several studies showed the connection between mutagenicity and carcinogenicity¹³. In the present study, we have conducted the in vivo acute toxicity study, 90 days sub chronic study, Mammalian Bone Marrow Chromosome Aberration Test and Mammalian Bone Marrow



SUNDARI 眼部精华/紧致

FULL INGREDIENT LIST

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Water/aqua, isododecane, steareth- 20, polysorbate 20, palmitoyl tetrapeptide- 3, palmitoyl pentapeptide-3, hesperidin methyl chalcone, glycerin, dipeptide- 2, carbomer, butylene glycol, acetyl hexapeptide- 8, polyacrylamide, laureth-7, c13-14 isoparaffin, sorbitol, dimethicone, centella asiatica extract, propylene glycol, oleth-20, laureth-23, laureth-4, phenoxyethanol, caprylyl glycol, sclerotium gum, geranium maculatum oil, calendula officinalis flower extract, pisum sativum (pea) extract, boswellia serrata extract, vitis vinifera (grape) seed oil, vitis vinifera (grape) seed extract, oryza sativa (rice) bran oil, oenothera biennis (evening primrose) oil

Bosein 抗衰老精华



- ◆ Increase collagen production and improve skin elasticity and firmness.
- ◆ Light formula absorbs quickly and leaves no greasy residue.
- ◆ Suitable for all skin types, including sensitive skin.
- ◆ Non-comedogenic, no preservatives.



NOW Solution关节肌肉霜



now[®]
solutions

Joint & Muscle Cream

- Soothing Relief for Active Individuals
- Conditions Areas Around Joints and Muscles
- Fast Absorbing and Deeply Penetrating

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