INTRODUCTION

The term “Propolis” emanates from the Greek word coined by Aristotle, pro (before) and polis (city), meaning, Before the City, or Defender of the City [1]. Bee Propolis (‘Bees’ glue’) is a resinous, gummy and balsamic material collected from flora by honey Bees (Apis mellifera L. belongs to Apidae family, genus Apis) used as construction and insulating material their hive. It is not only used as a construction material but also to protect the hive from microbial growth (fungi and bacteria) [2]. The composition of Bee Propolis varies on its botanical original and it has been reported that Bee Propolis helps to maintain homeostasis, reduce vibration, keep air flow in check, prevent hive against squatter and prevent putrefaction [3].

Description

Most of the Bee Propolis are opaque shiny irregular in shape and is solid at room temperature and become sticky above room temperature. It is dark green or brown in color having a sweet taste but can be bitter too. The composition, aroma and color of the Bee Propolis vary from hive to hive, season to season, Bee species, botanical source and geographical conditions prevailing at the location from where the resin is collected by honey Bees [4].

Traditional uses

Propolis has been known from at least 300 BC for its medicinal values in the world. For the Egyptians, the Bee was holy and they used Propolis to the art of mummifying corpses and as an antibiotic [5]. The Romans, seeing the Bee as God Jupiter convert the lady Melisso into a Bee and use to cure some lesions of the skin. Propolis has been anciently known to Greeks for healing qualities. It also was used in the Boer war for tissue regeneration and wound healing [6]. In the Balkan States it’s still used for the treatment of wounds and burns, sore throat, stomach ulcer [7] Traditionally ethanol extract of Propolis, has been known for anti-inflammatory effect for centuries [8]. Bee Propolis has been used pragmatic for centuries as an immunomodulatory agent [9]. It has been reported that from 12th century Bee Propolis was used as remedies in the mouth, throat infections, and dental caries [10].

Phytochemistry

Bee Propolis is official in the United States Pharmacopeia and natural health product monograph Canada [11, 12]. Now days engross has been ascending about its phytochemistry and pharmacological property. The phytoconstituents composition in the bee propolis varies and depends upon the flora in the location; more than 500 compounds have been isolated and identified till now. They belong to such assorted chemical classes as polyphenols like, phenylpropanoids, chalcone, terpenenes, lignans, coumarins, aromatic acids and their esters. This current review is an attempt to compile data which will give information of constituents present in Propolis.

Keywords: Propolis, Pinobanksin 3-acetate, Phytochemistry, Mummifying corpses

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ABSTRACT

Propolis, also called ‘Bee glue’, is resinous material collected by Bees from flowers, buds, and exudates of plants. Literature survey was conducted using different electronic databases, like PubMed, Scifinder, and Indian scientific database. The phytoconstituents composition in the Bee Propolis varies and depends upon the flora in the location; more than 500 compounds have been isolated and identified till now. They belong to such assorted chemical classes as polyphenols like, phenylpropanoids, chalcone, terpenenes, lignans, coumarins, aromatic acids and their esters. This current review is an attempt to compile data which will give information of constituents present in Propolis.

Review Article

BEE PROPOLIS (BEE’S GLUE): A PHYTOCHEMISTRY REVIEW

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Another chemical component which has been isolated from the Mexican Propolis has been 2',4'-dihydroxy-3'-methoxy-chalcone [38]. From the Argentinean propolis known as 2',4'-dihydroxy-3'-methoxy-chalcone [38].

During the phytochemical screening Propolis collected from Jeju Island contained chalcon and coumarin compounds. [E-4]-methoxy-4,2'-dihydroxy-3'-2',4'-dihydroxy-3'-methoxybutyl]-chalcone, (E,E,E)-4,2',4'-trihydroxy-3'-7',7'-dimethyl-2',5'-diaryl-chalcone, (E,E)-4,2',4'-trihydroxy-3'-5'-hydroxy-3',7'-di-menthyl-2',6'-diaryl-chalcone, (E,E)-4,2',4'-trihydroxy-3'-2',4',4',4'-trihydroxy-6'-methoxychalcone, 2-acetyl-3-dicinnamoylglucose, and (2R,3R)-6-[1-(4'-hydroxy-3'-methoxyphenyl)-2-propen-1-yl] pinobanksin.
Structure of some molecules isolated from Propolis

3-prenyl-4-hydroxycinnamic acid

2, 2-dimethyl-6-carboxyethenyl-2H-1-benzopyrane

3-(4-Hydroxy-3,5-bis(3-methyl-2-butenyl)phenyl)-2-propenoic acid

Artepillin C

2, 2-dimethyl-6-carboxyethenyl-8-prenyl-2H-1-benzopyran

3, 5-diprenyl-4-hydroxycinnamic acid

(2E)-3-[4-Hydroxy-3-(3-methyl-2-buten-1-yl)phenyl]acrylic acid

Drupanin

2, 2-dimethyl-6-carboxyethenyl-2H-1-benzopyran

(2S,3R)-3,5,7-Trihydroxy-2-phenyl-chroman-4-one

Pinobanksin

(2S)-7-Hydroxy-2-(4-hydroxyphenyl)-2,3-dihydro-4H-chromen-4-one

(1S,4S,8S,10R)-8-Benzoyl-4-(2-hydroxy-2-propenyl)-9,9-dimethyl-5,9-dihydro-4H-xanthen-3-carboxylic acid

Hyperibone B

(2E)-1-(2,4-Dihydroxybenzyl)-3-(4-hydroxyphenyl)-2-propen-1-one

Isoliquiritigenin

(2E)-3-(1,3-Methyl-2-buten-1-yl)-4-(1,3-phenylpropanoyloxy)phenyl]acrylic acid

Baccharin

(2S,3R)-3,5,7-Trihydroxy-2-phenyl-chroman-4-one

Pinobanksin

(All structures were drawn using ChemDraw ultra-software)
CONCLUSION

Propolis has been known at least 300 BC for its traditional medicinal value around the globe. In this review, anti-drug data has been collected from various data base study, to sum up the chemical composition of Propolis till date. The composition, aroma and color of the Bee Propolis vary from hive to hive, season to season, Bee species, botanical source and geographical conditions prevailing at the location from where the resin is collected by honey Bees. Around 500 compounds have been identified till date and the major chemical composition present on Propolis are flavonoids, terpenoids, phenolic and their ester. Besides that polyphenols like phenylpropanoids, chalcone, terpenenes, lignans, coumarins, aromatic acids and their esters were also identified and reported from the Propolis. However, the other secondary metabolites like as alkaloids, iridoids have not been isolated and identified from Propolis till date.

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CONFLICTS OF INTEREST

There are no conflicts of interest

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