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RESEARCH ARTICLE

PROPOLIS FROM PAST TO PRESENT

Geçmişten Günümüze Propolis

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ABSTRACT

The cave depictions about beekeeping dating back to 15 thousand BC show that beekeeping dates back to very old times. Although it is thought that beekeeping is done only for honey production at firstly, besides honey production, pollen, royal jelly and propolis production has an important place within the scope of beekeeping activities. There are beekeeping business that carry out beekeeping activities only for the production of pollen, purification and propolis. Because these products are in a more valuable position than honey according to their material value, nutritional value and food supplement qualities. Of these products, propolis is more prominent due to its treatment-helping qualities. In this study, the use of propolis from past to present is mentioned. According to the study result, propolis has been used in treatment since Ancient Egypt. Today, its importance has increased with the detection of the active substances it contains.

Keywords: Beekeeping history, propolis, propolis in treatment, alternative medicine.

ÖZET

Milattan önce 15 bin yıllarına dayanan arıcılık ile ilgili mağara tasvirleri arıcılığın çok eskiye dayandığını göstermektedir. İlk bakışta arıcılık faaliyetinin sadece bal üretimi için yapıldığı düşünülse de, bal üretimi yanında polen, arısütü ve propolis üretimi de arıcılık faaliyetleri kapsamında önemli bir yere sahiptir. Arıcılık faaliyetlerini sadece polen, arısütü ve propolis üretimi için gerçekleştiren arıcılık işletmeleri mevcuttur. Zira bu ürünlerin hem maddi değeri hem de besin değeri ve takviye edici gıda nitelikleri yerine göre baldan daha değerli bir konumdadır. Bu ürünlerden propolis daha ziyade tedaviye yardımcı nitelikleri nedeniyle ön plana çıkmaktadır. Bu çalışmada propolisin geçmişten günümüze kullanımına değinilmiştir. Çalışma sonucuna göre propolis tedavide Antik Mısırdan bu yana kullanılmaktadır. Günümüzde ise içerdiği etken maddelerin tespit edilmesiyle önemi daha da artmıştır.

Anahtar kelimeler: Arıcılık tarihi, propolis, tedavide propolis, alternatif tıp.

1. INTRODUCTION

Propolis, a bee product; leaf, bud, shell, etc. of various plants is a resin-like, slightly water-soluble viscous, sticky, pungent-smelling mixture collected from plant parts. Propolis is a waterproof and antimicrobial material which is produced by plants, and the resin compound that protects them from both cold and microorganism attack is transformed after being collected by honey bees. It is a heat insulating extract. Propolis is not a product that bees collect to feed other bees. Honey bees use propolis to defend their hives against any physical and chemical hazard.

Fig.1. Worker bees lining hive holes with propolis

Propolis is collected with the help of mandibles of the honey bee species, which is also called *Apis mellifera L.*, mixed with candle and saliva, is turned into pellets and transported to the hive. Here, honey bees are used for many purposes such as protecting the colony from diseases, covering the walls of the hives and honeycomb eyes, providing a hygienic living environment, coating the hive to prevent the creatures dying in the hive and reducing the hive entrance hole. To repair cracks and fractures in hives, propolis is produced inside the hive to prevent bacterial, fungal and virus infections. In this sense, propolis is an indispensable element of the physical and chemical defense system of the bucket (Keskin 2019).

Realizing these features of propolis, human beings have used propolis for treatment since ancient times. Because microorganisms that cause disease in bees are similar to microorganisms that cause disease in humans. It may be thought that it is effective on bacteria such as Streptococcus, Staphylococcus, Corynebacterium, Bacillus, Listeria, Actinomyces, Mycobacterium, which cause infections, which are particularly effective against gram-positive bacteria. In addition, the physical and chemical properties of Propolis vary depending on the geographical region it is obtained from and it shows high antioxidant, antimicrobial, anti-inflammatory and antitumoral properties due to the essential oils and polyphenols it contains. These qualities consist of 40-50% resin, 20-30% wax, 5-10% essential oils, 1-5% pollen, various phenolic compounds and organic acids contained in raw propolis. Propolis has been used as a natural remedy for mummification, increasing the body's defense mechanism against infections and treating it by closing wounds since ancient times because it is known to prevent caries (Ahn et al 2007; Li et al 2008; Aliyazıcıoglu et al 2013).

2. PROPOLIS IN HISTORY

The first beekeeping experience of human beings began with domestication of wasps using hollow logs, wooden pots, pots and woven wicker baskets. Some archaeological excavations in ancient Egypt show that honey was kept in simple wooden containers. While the Egyptians of propolis, a bee product, mummified their dead, Greek and Roman doctors used it as an antiseptic and wound healing. In ancient Egyptian art, bee depictions producing propolis were found on vases (Langenheim 2003). Again in this period, propolis was used in various home-made recipes. It is estimated that the Egyptians learned the mummification feature of propolis from bees and used it in mummification processes (Nicolas 1947). So much so that honey bees were "mummies" with propolis (Derevici et al 1965) to prevent the spread of disease after killing foreign bees that occupy the hive.

Fig.2. Papyrus showing beekeeping activities in Ancient Egypt

When we come to 3100 BC, it is seen that the importance of beekeeping in Ancient Egypt has increased gradually and even reached a divine dimension. Honey bees began to be processed into hieroglyphs during the period in question. Even the bees were associated with the gods, and the pharaohs were given the title of 'Bee King'. It was believed that the people of that time, the gods used bees for the production of honey, medicines and ointments (Hungton 1998).

While Incas recommended propolis as an antipyretic drug, propolis entered the London pharmacopeia in the 17th century as an official drug (Murray et al 2005). The use of propolis in cosmetics and health products, combined with pure or other natural products, has continued to this day. Researchers have been more interested in the chemical composition and biological properties of propolis in recent years. In addition, in ancient times, Jews used propolis for their own mixtures. The word “Tzori”, which means propolis in Hebrew and the features of this item, is mentioned in the The Bible, Jeremiah 8. In addition, propolis is mentioned as Gilead balm, Afarsemon, kataf, nataf (Ben-Yehoshua 2012).

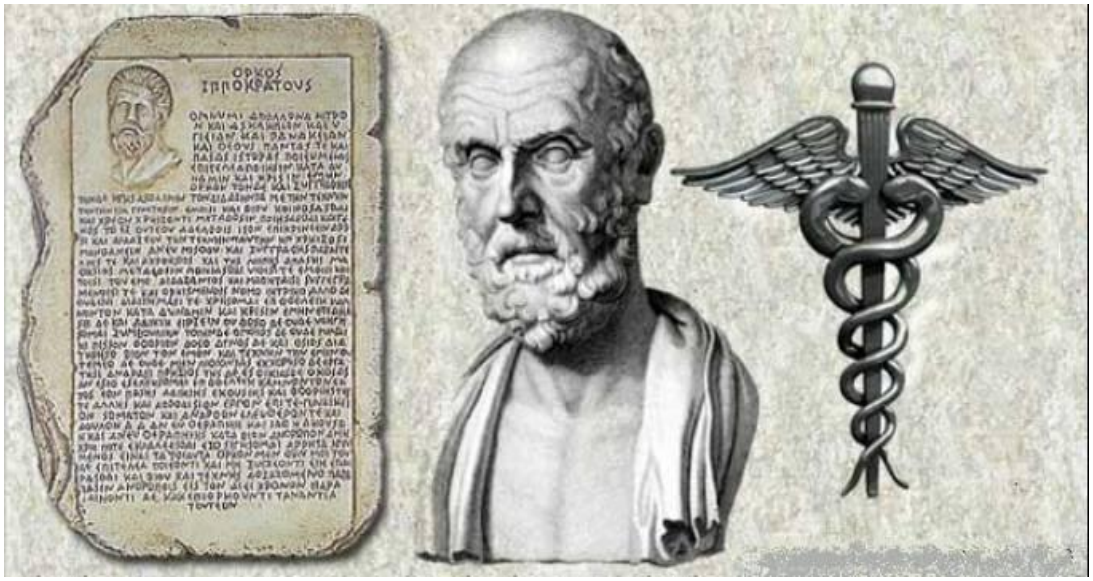

Fig.3. The father of medicine Hippocrates

Ancient Greeks used propolis as the main ingredient of the perfume known as "Polyanthus". It is known that Hippocrates, known as the father of modern medicine, and propolis in the recipes of Ibn

Sina in the 11th century (Dealey 2005, Beeo websites 2020). More than 15 Greek and Roman authors provided information on the preparation and application of propolis, the so-called third natural product of bees (besides honey and beeswax).

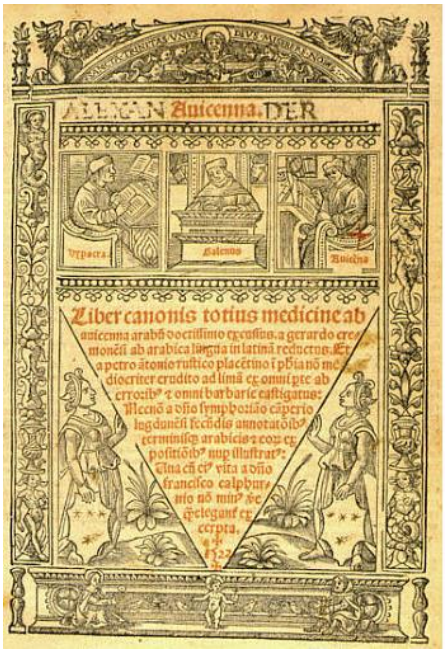

Fig. 4. AVICENNE (Abu Ali al-Hussein ibn-Abdullah Ibn-Sina)

In his work Aristo Historia Animalium, he mentions propolis as follows: "When the hive is delivered to honey bees cleanly and emptyly, the bees build the wax cells, extract the sap of all kinds of flowers and the nectars of willow and elm trees. With this to protect against the attacks of other creatures. If the entrances of the bucket with the same material are very wide, they narrow it. This substance (propolis) is dark black and is a kind of wax slag or by-product; it has a pungent smell and is a curative for wounds. " (Aristotle, Historia Animalium).

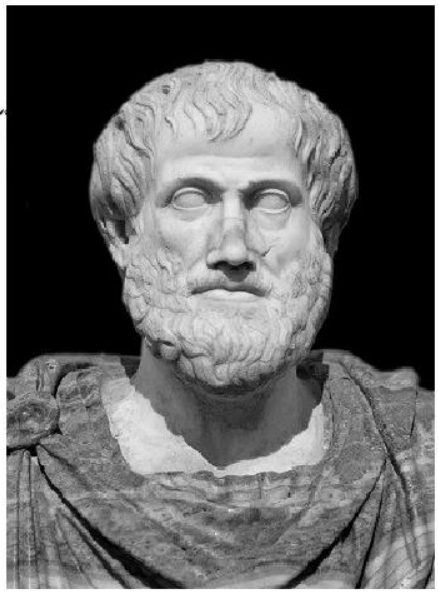

Fig.4. Aristotle, the leader of natural sciences

Gaius Plinius Secundus Maior mentions propolis in his giant Naturalis Historia: "Propolis is produced from vine or poplar sweet gum and has a more intense consistency, and flower juices are added to it.

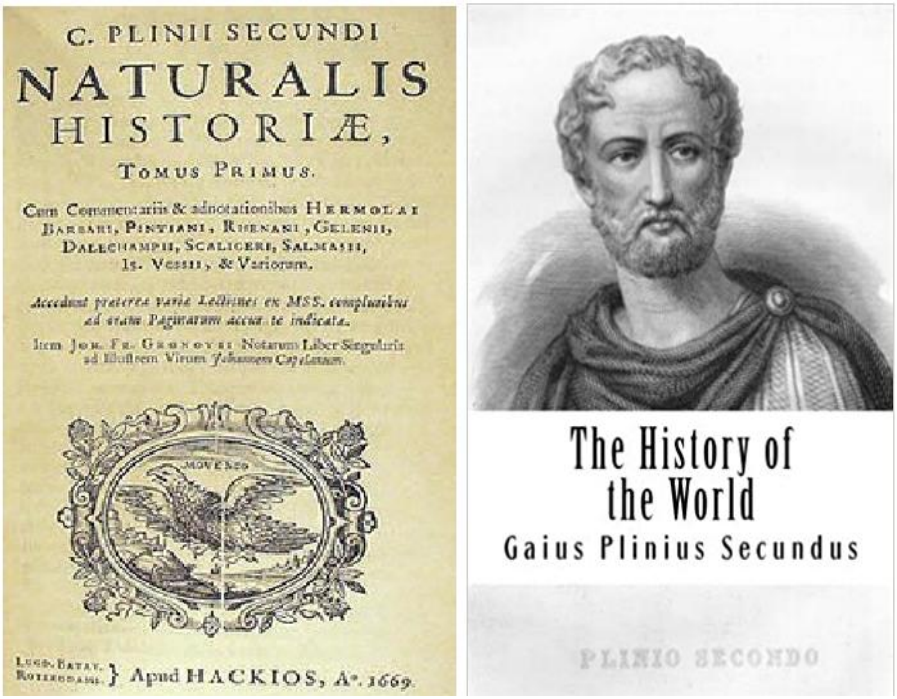

Fig.4. Gaius Plinius Secundus Maior and her giant "Naturalis Historia"

However, it still cannot be called a smooth wax, rather it is the basis of honeycombs; In this way, all entrances are stopped, otherwise it can serve the acceptance of cold or other harmful effects; it also has a strong smell, so much that many people use it instead of galbanum" (Taylor 1855). He stated that propolis is effective against eczema, muscle pain and rheumatism.

Beekeeping has an important place in Arab society from past to present. In Islam, a special importance is given to the bee. In the Quran there is a long chapter (sorat) with the name of bees which says about honey being healing for man:

وَأَوْحَىٰ رَبُّكَ إِلَى ٱلنَّحْلِ أَنِ ٱتَّخِذِى مِنَ ٱلْجِبَالِ بُيُوتًا وَمِنَ ٱلشَّجَرِ وَمِمَّا يَعْرِشُونَ ﴿٦٨﴾

And your Lord inspired to the bee, Take for yourself among the mountains, houses, and among the trees and [in] that which they construct.

ثُمَّ كُلِى مِن كُلِّ ٱلثَّمَرَٰتِ فَٱسْلُكِى سُبُلَ رَبِّكِ ذُلُلًا ۚ يَخْرُجُ مِنۢ بُطُونِهَا شَرَابٌ مُّخْتَلِفٌ
أَلْوَٰنُهُۥ فِيهِ شِفَآءٌ لِّلنَّاسِ ۗ إِنَّ فِى ذَٰلِكَ لَءَايَةً لِّقَوْمٍ يَتَفَكَّرُونَ ﴿٦٩﴾

Then eat from all the fruits and follow the ways of your Lord laid down [for you]. There emerges from their bellies a drink, varying in colors, in which there is healing for people. Indeed in that is a sign for a people who give thought (Kuropatnicki et al 2013).

In the Middle Ages. In his famous work "The History of Plants" (1597), John Gerard refers to the use of "resin or damp substance of black poplar tree buds" for healing wounds. The ointment made from poplar buds is good for all inflammations and mouth sores "(Gerard 1597).

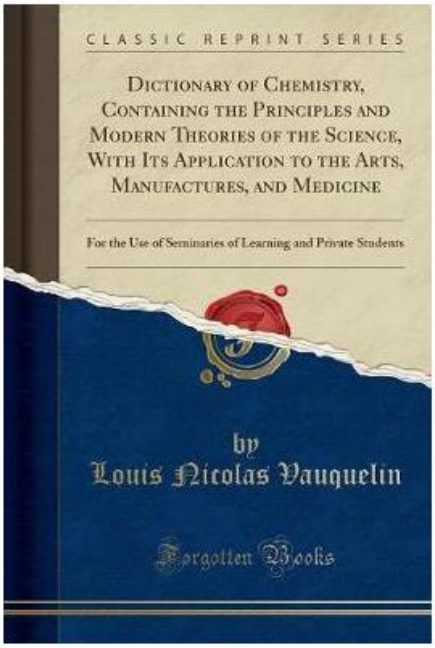

Fig.5. French chemist Nicolas Louis Vauquelin

At the beginning of the 19th century, propolis was studied and described by the French pharmacist and chemist Nicolas Louis Vauquelin. He used the alcohol extraction method to obtain propolis (Vauquelin 1803). In 1814 or 1815, a French chemist, Michel Eugène Chevreul, and in 1864, Piccard identified several important flavones from this substance (Piccard 1873).

3. RESULT

According to current studies, propolis consists of 30% wax, 50% resin and herbal balm, 10% essential and aromatic oils, 5% pollen and other substances, and more than 300 components have been identified in Propolis. The protein, carbohydrate, lipid, vitamin-mineral content of propolis is very low. Therefore, it is difficult to think of as a nutritional supplement. The beneficial biological properties of propolis are mostly attributed to phenolic substances such as flavonoids and hydroxycinnamic acid derivatives. Flavonoids are the most important group of compounds found in propolis. Flavonoids are found in photosynthesizing cells. Because they exist as secondary plant metabolites, they cannot be synthesized by humans and are therefore important for human nutrition (Silici 2005). Today, with the determination of the chemical properties of propolis in detail, the importance of propolis has emerged once again. In the past, people have determined the benefits of propolis experimentally, and then its use may have been culturally passed down from generation to generation. However, more comprehensive research is done on this subject today. Research results show that propolis can be used for supportive therapy in some infections, tumors and allergic diseases.

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