

Medicinal Values of Hive Products: A Review

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Abstract: Honey bees are the “Golden insects” that produce honey and other vital hive products. However, the best-known primary products of honey bees are honey and wax, but pollen, propolis, royal jelly, venom, queen, bees and their larvae are also marketable primary bee products. Worldwide the usage of such primary products as propolis, royal jelly and bee venom have increased mostly due to inclusion in cosmetics preparation. Medicinal use will increase once better and more detailed studies are completed, which however may not yet be in the very near future. Honey has medicinal uses like antiseptics and wound healing properties while propolis used to treat diabetes patients. Additionally, pollen has antioxidant property and anticoagulant and anti-inflammatory properties of bee venom serve to treat arthritis and other inflammatory conditions. In Ethiopia the most widely used hive products are honey and beeswax serving many functions, ranging from local beverage to different medicinal uses. Thus, this paper reviews details of some of the most important medicinal uses of hive products.

Key words: Beeswax • Bee venom • Honey • Propolis • Royal jelly

INTRODUCTION

Bee keeping is an ancient practice which deals with management and maintenance of honey bee [1]. Honey bees are valuable creatures that provide tremendous benefits for human beings, flowering plants as well as other life forms by providing their wondrous products and endless nectar and pollen gathering ability, which raises the pollination capacity of flowering plants [2].

Honey is the most important primary hive products both from quantitative and an economic point of view and the only concentrated form of sugar available to man in most parts of the world. Honey is the natural sweet substance produced by honey bees from the nectar of blossoms or from the secretion of living parts of plants in which honey bees collect, transform and combine with specific substances of their own, store and leave in the honey comb to ripen. Honey has not only nutritional benefit but also has numerous health benefits including as source of energy, as sweetener, used as natural

antiseptics, source of nutraceuticals, which are important anti-oxidants. Moreover, honey is an excellent ergogenic acid and helps in boosting the performance of athletes, because it maintaining blood sugar levels, muscle recuperation and glycogen restoration after an exercise as well as honey has important therapeutic treating wounds by facilitating fast healing process, as a result of its anti-microbial properties and helps in promoting autolytic debridement [3].

The best-known primary products of bee keeping are honey and wax. But pollen, propolis, royal jelly, venom, queen bees and their larvae are also marketable primary bee products. The quality and sometimes almost mystical reputation and characteristics of most primary bee products and their addition to other products usually, enhance the value or quality of these secondary products. For this reason, the secondary products, which partially or wholly, can be made up of primary bee products, are referred to here as “value added” products from bee keeping [4]. Honey bees are also known to be good pollinators and known in contributing a lot in human

foods security in increasing crop production several folds [5].

Apitherapy is the use of bee products such as honey, pollen, propolis, royal jelly, bee venom and wax to prevent or treat illness and promote healing. And also, apitherapy is 'the art and science of treatment and holistic healing through the honeybee and her products for the benefit of mankind and all the animal kingdom. The roots of apitherapy can be traced back more than 6000 years to medicine in ancient Egypt. The Greeks and Romans also used bee products for medicinal purposes. This is described by Hippocrates (460-370 BC), Aristotle (384-322 BC) and Galen (130-200 AD), who prescribed the use of honey and bee venom as a cure for baldness. However, whether these practitioners from the ancient world really represent the fathers of apitherapy is questionable. Apitherapy also described (1400 years ago) in the holy book (Qur'an) says: And your Lord inspired the bees, saying: "Take your habitation in the mountains and in the trees and in what they erect. "Then, eat of all the fruits and follow the ways of your Lord made easy (for you)." There comes forth from their bellies, a drink of varying color, wherein is healing for men. Verily, in this is indeed a sign for people who think" (Al-Nahal: 68, 69) [6].

There is a major difference between apitherapy and the use of bee products in defined medical situations. Apitherapists believe that bee products can be used to cure most diseases. However, the use of bee products in conventional medicine is limited to certain indications where they have shown effects which are equal to or better than those of standard treatments, for example, in treating wounds and burns and as an interesting approach in arthritis [7]. Therefore, the objective of this paper is to review the major medicinal benefits of hive products.

Honey: Honey is the natural sweet substance produced by honeybees from the nectar of blossoms or from the secretion of living parts of plants or excretions of plant sucking insects on the living parts of plants, which honeybees collect, transform and combine with specific substances of their own, store and leave in the honey comb to ripen and mature [8]. Honey is the most important primary product of beekeeping both from a quantitative and an economic point of view. It was also the first bee product used by humankind in ancient times. The history of the use of honey is parallel to the history of man and in virtually every culture evidence can be found of its use as a food source and as a symbol employed in religious, magic and therapeutic ceremonies [9].

Medicinal Uses of Honey

Antibacterial Activity of Honey: A laboratory demonstration of honeys' antibacterial activity was first carried out in 1937 [10] and gave the name 'inhibine' to the substance which inhibited bacteria. A study suggested that the possibility of hydrogen peroxide was responsible for the antibacterial activity of honey since both the antibacterial activity of honey and hydrogen peroxide were destroyed by light. Similar study reported that hydrogen peroxidase which is produced by the glucose oxidase of honey could be the inhibitory substance against bacteria. However, it is known that honey itself, as well as bacteria produce a catalase that eliminates hydrogen peroxide. But although catalase is active with high concentrations of hydrogen peroxide, it is of low activity with physiological levels. The amount of catalase necessary to destroy the antibacterial activity was found to be unexpectedly high. A solution of hydrogen peroxide used as an antiseptic is likely to be far less effective than a "slow release preparation" in the form of honey [11].

Most commercial honey is produced by the species, *Apis mellifera*. However, some work has been done with other species of bees. An interesting study was carried out by Cortopassi-Laurino and Gelli [12]. In their work, a comparison was made between the physicochemical properties and antibacterial activity of honey produced by Africanized honey bees (*A. mellifera*) and *Meliponinae* (stingless bees) in Brazil. For both types of honey at a concentration of 5-25%, *Bacillus sterothermophilus* was found to be the most susceptible and *E. coli* the least susceptible of the seven bacterial isolates tested (the other five being, *B. subtilis*, *B. subtilis* Caron, *Staphylococcus*, *Klebsiella pneumonia* and *Ps. aeruginosa*).

Classifying the honey according to the predominant floral source, honey produced by Africanized honey bees from predominantly *Mimosa* and *Eucalyptus* had the greatest antibacterial activity. *Meliponasubnitida* honey produced from *Mimosa bimucronata* and *Plebiaspecies* honey produced from *Borreria/Mimosa* exhibited the greatest antibacterial activities [12].

In an extensive review on the antibacterial activity of honey, it was suggested that honeys intended for therapeutic use, should be assayed for their antibacterial activity as a form of quality assurance. It is also recommended that honey is protected from light to prevent possible reduction of its antibacterial activity [13].

Effect on Gastroenteritis: Infections of the intestinal tract are common throughout the world, affecting people of all ages. The infectious diarrhea exacerbates nutritional deficiencies in various ways, but as in any infection, the calorific demand is increased. Pure honey has bactericidal activity against many enteropathogenic organisms, including those of the *Salmonella* and *Shigella* species and enteropathogenic *E.coli* [14].

In vitro studies of *Helicobacter pylori* isolate which causes gastritis have been shown to be inhibited by a 20% solution of honey. Even isolates that exhibited a resistance to other antimicrobial agents were susceptible. In a clinical study, the administration of a balanced diet and 30 ml of honey three times a day was found to be an effective remedy in 66% of patients and offered relief to a further 17%, while anemia was corrected in more than 50% of the patients. Also, honey was found to shorten the duration of diarrhea in patients with bacterial gastroenteritis caused by organisms such as *Salmonella*, *Shigella* and *E. coli* [15].

Effect on Gastric Ulcers: Clinical and animal studies have shown that honey reduces the secretion of gastric acid. Additionally, gastric ulcers have been successfully treated by the use of honey as a dietary supplement. An 80% recovery rate of 600 gastric ulcer patients treated with oral administration of honey has been reported [16]. Radiological examination showed that ulcers disappeared in 59% of patients receiving honey. Animal experiments have shown that the administration of a honey solution via a tube in the stomach of rabbits prior to them being administered with 0.5 g ethanol per kg body weight accelerated alcoholic oxidation. A more recent animal study [17] showed that honey administered subcutaneously or orally before oral administration of ethanol affords protection against gastric damage and reverses changes in pH induced by ethanol. A controlled clinical trial demonstrated the use of fructose in the treatment of acute alcoholic intoxication. Therefore, it was concluded that fructose may be beneficial in shortening the duration of alcoholic intoxication.

Wound Healing Properties: Wet dressings or any form of irrigation moisten the tissues and therefore delay healing. Dry dressings adhere to the surface, causing pain and injure the granulating surface every time they are changed. Oily dressings prevent the surface secretions from escaping freely and may cause them to spread onto

the neighboring skin surfaces and cause undesirable reactions or toxic effects. Conversely, honey is an effective treatment of wounds because it is non-irritating, non-toxic, self-sterile, bactericidal, nutritive, easily applied and more comfortable than other dressings. The treatment of wounds with honey has rendered them bacteriological sterile within 7-10 days of the start of the treatment and promoted healthy granulation of tissue [3].

Generous soaking of wounds and abscess cavities with honey, sometimes using castor oil to facilitate dressing, was found to include the following advantages: first, cross-infection of wounds often encountered with conventional therapy, was prevented because honey forms a mechanical and/or chemical barrier to infectious agents; and second, a shorter duration of treatment and therefore hospitalization. Honey was also found to be more effective as an antibacterial agent against several *Pseudomonas* and *Staphylococcus* strains than the antibiotic, gentamicin [18].

In a more recent report on honey treatment of wounds, ulcers and skin graft preservation, the importance of sterile, residue-free honey for medical use was pointed out. It is advisable to use honey derived from specified pathogen-free hives, which have not been treated with drugs and are gathered in areas where no pesticides are used. In this work, it was found that the antibacterial activity of their honey samples remained constant over more than a year [19].

Effect on Respiratory System: In temperate climates and places with considerable temperature fluctuations, honey is a well-known remedy for colds and cough, throat or bronchial irritations and infections. The benefits, apart from antibacterial effects, are assumed to relate to the soothing and relaxing effect of fructose [20].

Pollen: Pollen is a part of flowers and represents the male reproductive portion; it also has very special “energies” or values of its own. In a wider understanding in certain philosophical environments, special plants and pollen surface structures interact with cosmic energies. Pollen is richer in most ingredients when compared on a weight or calorie content basis than such foods as beef, fried chicken, baked beans, whole wheat bread, apple, raw cabbage and tomatoes. While comparable in protein and mineral content with beef and beans, pollen averages more than ten times the thiamine and riboflavin or several times the niacin content [21].

Medicinal Uses of Pollen

For Prostate Problems and Allergies: The long-term observations on the medicinal effect of pollen are related to prostate problems and allergies. Several decades of observations in Western European countries and a few clinical tests have shown pollen to be effective in treating prostate problems ranging from infections and swelling to cancer. Supplementation of animal diets with pollen has shown positive weight gain and other beneficial effects for piglets, calves, broiler chickens and laboratory cultures of insect. Additionally, certain bacteriostatic effects have been demonstrated, but this is attributed to the addition of glucose oxidase (the same enzyme responsible for most antibacterial action in honey) by the honeybee when it mixes regurgitated honey or nectar with the pollen [22].

Also, this activity varies between pollen pellets and is much higher in bee bread. A very slight antibacterial effect can also be detected in pollen collected by hand. There is some evidence that ingested pollen can protect animals as well as humans against the adverse effects of x-ray radiation treatments [23].

Antioxidant/anti-aging Activities: The oxidative damages caused by free radicals have been implicated in quite a number of disease processes and is the primary factor in aging. Antioxidants are capable of providing protection, sometimes significant protection, against this oxidative damage. Interestingly, bee pollen appears to provide significant antioxidant activity, which may explain its traditional use as an anti-aging food. One animal study demonstrated that bee pollen was able to abolish the effects of harmful ionizing radiation on the brain. This was a function of bee pollen’s antioxidant properties [24].

Other Benefits: The effects and benefits derived from pollen consumption, according to some of the non-scientific literature on the subject are endless. Many people report improvement of sometimes chronic problems. Most of the major ailments reported to improve with pollen preparations are listed in the Table (1) below. However, one should be aware that the benefits reported are not usually from scientific studies but are merely personal experiences without any medical or other scientific investigation of claims. Sometimes the disappearance of symptoms was witnessed by physicians, but the reasons for such cures were not confirmed through further investigations.

Table 1: Non-scientific claims and reports of benefits, cures or improvements derived from the use or consumption of bee-collected pollen.

Improvements	Cures of benefits	Reference
Sexual prowess	Cancer in animals	[25]
Performances (of a race horses)	Male sterility	
Rejuvenation	Acne Ulcers	
General vitality		
Skin vitality	Anemia	[26]
Appetite	High blood pressure	
Hemoglobin content	Nervous and endocrine disorders	
Athletic performance	Colds	
Digestive assimilation		

Propolis: Propolis is a resinous hive product collected by honey bees from various plant sources. It has a long history of being used in folk medicine dating back to many centuries. It also has been reported to possess various biological activities, namely anticancer, antioxidant, anti-inflammatory, antibiotic, antifungal and anti-hepatotoxic.

Propolis, or "bee glue," means a gum that is gathered by bees from various plants. It is strongly adhesive resinous substance, collected, transformed and used by bees to seal holes in their honeycombs. Etymologically, the Greek word propolis means pro, for or in defense and polis, the city, that is “defense of the hive.” Bees use it to seal holes in their honeycombs, smooth out internal walls, as well as to cover carcasses of intruders who died inside the hive in order to avoid their decomposition. Propolis also protects the colony from diseases because of its antiseptic efficacy and antimicrobial properties [27].

Medicinal Uses of Propolis

Antimicrobial Activity of Propolis: One of the most widely known and extensively tested properties of propolis is its antibacterial activity. Many scientific tests have been conducted with a variety of bacteria, fungi, viruses and other microorganisms. Many of the tests have shown positive control of the organisms by various extracts and concentrations of propolis. Whether propolis exhibits bactericidal or bacteriostatic characteristics often depends on its concentration in the applied extract. Sometimes, propolis extracts are more effective than commercially available drugs [28].

Many researchers had investigated the antibacterial activity of propolis and its extracts against Gram-positive and Gram-negative strains and found that propolis had antibacterial activity against a wide range of Gram-positive rods but had a limited activity against

Gram-negative bacilli. The bactericidal effect of propolis was tested and the result shows that it had a bactericidal effect on *Staphylococcus* and *E. coli* strains at concentrations of 1.5-3 mg/ml, on *Shiga Bacillus* and *Pyocyanic Bacillus* at 6 mg/ml; on *Sonne Bacillus* at 1.5 mg/ml and on *Salmonella* strains at 3-5 mg/ml [29].

Diabetes: Under physiological conditions, a widespread antioxidant defense system protects the body against the adverse effects of free radical production. The antioxidant defense system represents a complex network with interactions, synergy and specific tasks for a given antioxidant. The efficiency of this defense mechanism is altered in diabetes and, therefore, the ineffective scavenging of free radicals may play a crucial role in determining the tissue damage. Propolis-ethanol extract has a beneficial effect on reduction of blood sugar levels in alloxan-induced diabetes rabbits. Moreover, propolis also showed ant hyperglycemic effect in patients with Type 2 diabetes [30].

Royal Jelly: Royal jelly is secreted by hypo pharyngeal gland (sometimes called the brood food gland) of young worker (nurse) bees, to feed young larvae and the adult queen bee. Royal jelly is always fed directly to the queen or the larvae as it is secreted, it is not stored. Royal jelly is therefore, related to the method of production, it is the food intended for queen bee larvae that are four to five days old [21].

Medicinal Use of Royal Jelly

General Systemic Activities: Royal jelly has a history of folk use as a skin tonic and hair growth stimulant. The skin benefits are supposed to include a nourishing process that reduces wrinkles, although there is no actual scientific research that supports these claims (or the hair growth claims). Royal jelly has also been considered to be a general tonic that has a general systemic action rather than any specific biological function, which benefits menopause and sexual performance. Perhaps its most significant use has been as an aid for increasing energy [31].

Anti-tumor, Anti-bacteria and Anti-inflammatory Activities: Scientific research on royal jelly has revealed that it possesses antitumor activity in experimental mouse leukemia. Additional research has demonstrated that royal jelly has antibacterial activity against Gram-positive bacteria, but not against Gram-negative bacteria. Furthermore, research with chronically diabetic rats

demonstrated that royal jelly possesses an anti-inflammatory action and is able to augment wound healing. Royal jelly has also been shown to prevent the cholesterol-elevating effect of nicotine and has lowered serum cholesterol in animal studies. Some research has also demonstrated that royal jelly can lower cholesterol levels in humans [32].

Honey Bee Venom: Honeybee venom is produced by two glands associated with the sting apparatus of worker bees. One is lying in the abdomen rather long and known as acids gland of the sting producing from acid, while the other gland is short, thick and known as alkaline gland. Its production increases during the first two weeks of the adult worker's life and reaches a maximum when the worker bee becomes involved in hive defense and foraging. It diminishes as the bee gets older. The queen bee's production of venom is highest on emergence, probably because it must be prepared for immediate battles with other queens [21].

Medical Uses of Bee Venom

Anti-inflammatory Activities: While apitherapy encompasses use or consumption of bee products, in the Anglosphere the term is most commonly associated with bee venom therapy and not the consumption of honey or other bee products. Due to its anticoagulant and anti-inflammatory properties bee venom was mainly used to treat many inflammatory disorders such as arthritis, bursitis, tendinitis, dissolving scar tissue (e.g. keloids), Herpes zoster, joint disease and rheumatoid arthritis, Lyme disease, Multiple Sclerosis and osteoarthritis [33].

Furthermore, research in various animal experimental models with inflammatory diseases demonstrated that bee venom administration was successfully effective in suppressing the inflammation. Interestingly, bee venom administration through acupuncture point (acupoint) was proven successful for producing a strong therapeutic effect as compared to non-acupoint injection. Testimonials and observations indicating the effectiveness of bee venom are common throughout Western and Asian cultures discovered that daily injection of 1 mg/kg of bee venom into rats reduced formaldehyde-induced arthritis in the foot pad. In another rat model in which *Mycobacterium* was the inducer of inflammation, intraperitoneal injection of 1 mg of bee venom inhibited the arthritic effect whom given daily [34].

There is no standardized practice for the administration of bee venom. Some reports suggest that the location of the sting is important, with the sting acting

as a sort of acupuncture in combination with the effects of the venom, while others report the location is not important. The number of stings also varies widely from a few to hundreds and they may be administered either by live bees or by injection. This treatment can cause pain and even result in death if the subject has an allergy to bee venom, which can produce anaphylactic shock [20].

Other Benefits: The venoms' benefits to human beings as well as to animals are very long. Most of the reports of cures are of individual cases, though several unrelated patients have experienced the improvement or cure of similar ailments. BV treatments are often accompanied by changes in life style, nutrition or other which may account for part, if not most of the benefits from treatments. The diseases and problems which have been reported by patients or doctors as improved or healed with bee venom therapy. On the other hand, stinging should never be tried unless there is immediate access to emergency treatment in case of an allergic reaction. Bee venom has long been used in traditional medicine for the treatment of various kinds of rheumatism. Although venoms of the different honeybee species differ slightly, there have been reports of successful rheumatism treatment with *Apis dorsata* venom by and with *A. cerana* venom [26].

Bee Wax: Bee wax is produced from the bee's own body during the worm period of the day. The bee uses wax to build the comb cells in which their broods are reared and also the cells in which honey and pollen are stored. It is a thin scale produced by glands of 12-17 days old worker bees on the ventral (stomach) surface of the abdomen. Worker bees have eight wax producing glands from abdominal segments 4-7 [21].

Medicinal Use of Bee Wax

Slow Drug Releasing Function: Beeswax is considered safe for human consumption and has been approved as an ingredient in human food. As a coating for drugs or pills, beeswax facilitates ingestion but retards dissolution of the enclosed compounds until they reach the digestive tract. Beeswax can also be prepared as a mixture with the drug and then functions as a time release mechanism, releasing the drug over a longer period of time. It is inert, i.e. it does not interact with the human digestive system at all and passes through the body unaltered. However, substances dissolved or encapsulated in waxes are slowly released [35].

One such suppository base (a substance which allows slow release of another substance) has been developed on the basis of 5% beeswax, 5% palmitic acid and 90% of Nubon, a semi-synthetic hydrogenated vegetable oil. This was used initially with chloramphenicol. In another preparation, beeswax alone served as the carrier for the drug. On an experimental basis nalidixic acid suspended in beeswax remained longer in the blood of tested animals after oral application than when the acid was administered directly [36].

Other Benefits: Chewing dark comb (but not the old, black brood comb) without honey, brood or bee-bread is known to be effective against colds. A study has shown that even the wax fractions of propolis have antiviral activities. Older combs contain among many other things a good portion of propolis [37].

Beeswax is the least allergenic bee product. There is only one report on skin allergy caused by beeswax. Beeswax has antibacterial properties and when applied to the skin improves its elasticity and makes it look fresh and smooth. It can be chewed for strengthening the gingival and to increasing saliva and stomach juices.

Warm beeswax has excellent warming properties when applied against inflammations of muscles, nerves and joints. Therefore, beeswax is the main bee product to be used for thermo-therapy. For this purpose, following application is suggested applied after muscle, nerve and tendon inflammation due to colds, lumbago, neuritis, myalgia, arthrosis and arthritis. Beeswax can be used to fill capsules with equal amounts of drugs or other ingredients of various granule sizes. The granules of drugs are made adhesive by coating them with molten wax (about 90 g molten waxes for 3kg of granules), fat or glycerol, by spraying with liquid paraffin or by mixing them with powdered wax or fat and heating. After thorough mixing the hard capsules are pressed with their open end into an evenly spread layer of the mixture [38].

Bee Keeping Products and Their Utilization in Ethiopia

Honey: Ethiopia ranks 10th and 4th in the world in honey and wax production, respectively. The current annual honey production is estimated at approximately 24 tones, accounting for about 24% and 2% of the total Africa and world honey production, respectively. With this level of production, the bee keeping farmers of the country gain approximately ETB 350 million annually [39].

In Ethiopia honey is almost exclusively used for local conception and to a very large extent (80%) for brewing of mead, locally called 'Teg'. Almost no wedding or other cultural, resinous and social events can be imagined without the honey wine 'Teg'. Even though honey satisfies the locally demand, it is so crude that it cannot compete in the international market [40].

However, the products obtained from this sub sector are still low as compared to the potential of the country. Although thousands of tons of honey are produced every year it is usually poorly managed and unattractive in appearance. Because of this its place in the local market being taken by imported money. Moreover, traditional hive honey is of good quality as long as it is in the hive. Faulty handling, from the time of its harvests until it reaches to market is responsible for its inferior quality. The type of hives used the methods of removing and storage of honey play a vital role in the quality of honey [41].

Accordingly, the most important honey and beeswax production regions in Ethiopia are Oromia (about 46% of total production), Southern nations, Nationalities and Peoples Regional state (SNNPR) (22%), Amhara (25%) and Tigray (5%). In more detail, the major supply areas in the country include places like Sidama, Jimma, Gonder, Wollega, Illubabor, Bale and Gojjam [42].

Bee Wax: Bee wax or beeswax is a natural secretion from wax glands on the sides of the body of honey bees and is used primarily as a building block for the bee's honeycomb cells in which the young are raised and honey and pollen are stored. It is the second most abundant bee hive product, which has high economic value and a good trade commodity [43].

Like honey, bee wax is also a multipurpose natural bee product, which is used in the manufacture of more than 300 commodities. Ethiopia is the 4th largest bee wax producing country in the world and the 3rd largest bee wax exporter in Africa with annual bee wax production of the country is estimated about 3,658 tones and the annual average value of bee wax is estimated at about 125 million Birr [44].

In Ethiopia beeswax is used traditionally for coating of church candles. A kilogram of beeswax could be enough to make about 50 candles it is pines candle because it is smokeless and drip less. Demand of Beeswax as a church candle is high here in this country because many of the church still follow the tradition of allowing

any beeswax candles for special rights and ceremonies very little portion of the wax is also used for floor polish making [45].

CONCLUSIONS AND RECOMMENDATIONS

Bee keeping is an art of keeping bee colonies for means of economic benefits. The products of bee keeping are honey, wax, pollen, propolis, royal jelly and bee venom, which have marketable and economic benefit. Today in the demand for beekeeping products in the world in general is growing tremendously high due to the importance of it as inclusion in cosmetic preparation, as natural food, medicinal use and to other values. Different studies show that, in microbiological and clinical tests, these hive products offer many advantages in controlling bacterial growth and in the treatment of certain health problems. Also the administration of honey for the treatment of wounds has desirable features like absence of antibiotic resistance as found with conventional antibiotics, the lack of side effects in alleviating gastric pain and shortening the duration of diarrhea are all. Even in modern day society, the medicinal use of hive products still has a place. Therefore, based on the above conclusion the following recommendations are forwarded: Understanding the medicinal uses of hive products is essential for beekeepers so as to exploit maximum benefit of honey bees. Although, Ethiopia is the original home land of economically important honey bee species, it is advisable to improve honey bees with desirable trait to attain maximum quality and quantity of bee products. Modern technologies and research results in the subject area should be extended to farmers for better economic benefits.

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