"نَرْفَعُ دَرَجَاتٍ مِّن

نَّشَاء وَفَوْقَ كُـلِّ

ذِي عِلْـمٍ عَلِيـمٌ "

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INTRODUCTION

Honey bees can be considered as one of the most valuable productive organism (hive is the productive unit) and an excellent beneficial investment projects with rapid capital money return and lower cash investment money are required when compared with lactating and fattening animal's projects which require a huge capital money investment **(Schmidt and Buchmann, 1992)**.

Economic importance of Honey bee

Beside its essential role in plant production of crops that requires insect pollination to pollinate and proliferate, many products are produced by honey bee **(Pearson, 2004)** such as: honey, propolis and pollen which are botanical in origin and are collected and processed by bees rather than being produced de novo.

On the other hand, royal jelly, venom and beeswax are manufactured by honeybee themselves **(Blum, 1992; Gary, 1992 and White, 1992).**

Honey

Honey is the most important honey bee product and it is a natural sweet substance produced by honey bees from the nectar of plants or from secretions of living parts of plants or excretions of plant sucking insects on the living parts of plants, which the bees collect, transform by combining with specific substances of their own, deposit, dehydrate, store and leave in the honey comb to ripen and mature **(Pearson, 2004).** Also honey used as an additive in processed foods, cosmetics and other products and also it is used for the cure of many illnesses such as pharangitis, tonsillitis, ulceration, and scratches, also **(Ozkirim and Keskin, 2001)** stated that, the famous anzer honey is used for the cure of the illnesses such as pharangitis, tonsillitis, ulceration, and scratches due to the experiences of the people living in Turkey.

Propolis

It is a resinous and often sticky plant-derived material used by bees for caulking, sealing, lining, strengthening and preserving inside the hive and around the entrance **(Pearson, 2004).** Propolis and some of its constituents exhibit a variety of

biological and pharmacological activities, and it has had an ancient history as a curative agent in human health.

Pollen

Pollen consists of the male reproductive cells of flowering plants, with which bees have coevolved over 90 million years. Pollen supplies all the bees' nutrients (proteins, fatty acids, minerals, vitamins) for brood rearing, and for adult growth and development **(Pearson, 2004).** Pollen is collected commercially by a device known as a pollen trap, of which there are many designs. The trap essentially dislodges up to about 60% of the pollen pellets off the legs of returning bees. The pollen falls into a collection drawer, and is therefore known as “bee collected pollen” or “trapped pollen” **(Schmidt and Buchmann, 1992).**

The international market for pollen is mainly for human nutritional supplements, feeding to bees, and as an animal food (especially race horses). Pollen for human consumption is formulated into a wide range of products, including tablets, granules, oral liquids (which are usually a pollen extract in a honey base), candy bars and tonics etc.

Royal jelly

Royal jelly is a creamy-white secretion of the hypo pharyngeal glands of young workers that is fed to larval queens. Royal jelly is commonly used as a human dietary supplement and is also used in cosmetics. It has medical uses In Asian countries. Royal jelly is usually produced in colonies maintained specifically for that purpose, without a queen where Worker larvae are inserted into artificial queen cups and worker bees are allowed to feed these for 3 days, whereupon the larvae are removed and the royal jelly is harvested with a spoon or by gentle suction **(Schmidt and Buchmann, 1992).**

The international market for royal jelly is mainly the cosmetic industry and the health food market. In the health food market royal jelly is often added as a supplement to other ingredients and vitamins and can be taken in capsules, in beverages, in confectionaries, or mixed with honey as a spread. Small amounts of royal jelly are included in a range of cosmetics.

Beeswax

Beeswax is a complex mixture of lipids and hydrocarbons that is produced by the wax glands of honey bees **(Pearson, 2004).** Wax is commercially produced from three sources: wax cappings, bits of burr comb scrapings from hive bodies and frames, and old combs that are to be recycled. A ton of extracted honey yields about 9-11 kg of wax from the cappings **(Schmidt and Buchmann, 1992).**

The major international market for beeswax is in the cosmetics and related industries, where it is used in a myriad of products including facial creams, ointments, lotions and lipsticks. The largest industry using beeswax as a raw material is the candle industry. other minor industrial uses, including the dental industry, waterproofing materials, floor and furniture polishes, grinding optical lenses, children crayons, sweets and chewing gum, musical instruments, ski and ironing wax and wax for archery bow strings.

Bee Venom

Honeybee venom is synthesized by the venom glands of workers and queens, stored in the venom reservoir, and injected through the sting apparatus during the stinging process **(Pearson, 2004).**

Bee venom is commercially collected by means of a special apparatus that uses electrical current to force worker bees to sting a rubber mat or synthetic membrane and the venom is collected on a glass plate positioned below the membrane. The device is inserted into each hive and operated for only a few minutes **(Schmidt and Buchmann, 1992).**

The international market of bee venom is small and confined to medical use for desensitizing patients allergic to bee sting and also for folk medicine for arthritis. It is traded in capsules, or vials or tablets for human consumption.

The development of long-distance travel among human beings introduced global trade in plants and animals introducing new species and diseases to regions where they did not exist previously. New diseases were introduced into bees and affected them severely **(Ongus, 2006).** Among the most serious diseases are those caused by viruses and parasites.

The enemies of bees can be classified as parasites, predators, disturbers, commensals, or chemicals like insecticides and herbicides depending on the nature of their damage and their interdependence with bees **(Beljavsky, 1927).**

Diseases of honey bee can be mentioned as viral, bacterial, fungal and parasitic diseases beside other pests and enemies **(El-ansary, 2007).** Thus parasitic diseases are one of the most important enemies of honey bee that surly destroy the productive power of the bee and can destroy the whole colony especially the ectoparasite *Varroa* mite where the spread of mite is worldwide. At the present time, make it to be considered as the most serious global threat to bee keeping industry that is because no country had succeeded in eradication or restricting its spread **(Matheson, 1995 and Martel and Zeggane, 2002).**

The *Varroa* mite increases the incidence of other honey bee pathogens **(Ball, 1994),** and without application of effective control methods against *Varroa* mite, the bee industry as well as the production of crops that requires insect pollination will be badly affected **(Witherell and Herbert, 1988).**

So, the Aim of the present study is to identify and determine the prevalence of the parasites infesting honey bees, as well as, control trials of *Varroa* mites infecting honey bee colonies under natural conditions.

REVIEW OF LITERATURES

I- Taxonomy

A- Honey bee

According to (**El- Ansary 1998**)

Kingdom:Animalia

Phylum:Arthropoda

Class:Insecta

SubClass:Pterygota

Division:Endopterygota

Order:Hymenoptera

SubOrder:Apocrita

Family:Apidae

Genus: Apis

Species: mellifera

Cerana

B- Varroa mite

Anderson and Trueman (2000) reported that, *Varroa (V) jacobsoni Oedemans (Oud)*.1904 was first described as a natural ectoparasitic mite of the Eastern honeybee (*Apis (A) cerana*) throughout Asia. It later switched host to the Western honeybee (*A. mellifera*) and has now become a serious pest of that bee worldwide. The studies reported here on genotypic, phenotypic and reproductive variation among *V. jacobsoni* infesting *A. cerana* throughout Asia demonstrate that *V. jacobsoni* is a complex of at least two different species. In a new classification *V. jacobsoni* is here redefined as encompassing nine haplotypes (mites with distinct mtDNA CO-I gene sequences) that infest *A. cerana* in the Malaysia Indonesia region. Included is a Java haplotype, specimens of which were used to first describe *V. jacobsoni* at the beginning of this century. A new name, *V. destructor* new species, is given to six haplotypes that infest *A. cerana* on mainland Asia. Adult females of *V. destructor* are significantly larger and less spherical in shape than females of *V. jacobsoni* and they are also reproductively isolated from females of *V. jacobsoni*. The taxonomic positions of a further