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### Bee products and their biological effects

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Honeybees evolved with flowering plants 50 million years ago. While they provide pollination of plants, they collect nectar, resinous, pollen etc. from plants and turn them to the bee products for their life. On the other hand, human beings discovered bee products 15000 years ago and used them for their own sake. Nowadays bee products are divided into two groups. First one is; honeybees collect from plants and partially add from their bodies. These are honey, pollen, bee bread, and propolis. Second one is; honeybees secrete them from their bodies or directly from the bee body. These are royal jelly, beeswax, bee venom, and apilarnil. These products show antioxidant, antibacterial, antifungal, antiviral, antitumoral etc. beneficial biological activities in humans and so today they are very popular for the consumers. These products are also used in medical treatment methods and this kind of treatment method is called "Apitherapy". Apitherapy is used by the doctors from all over the world in the prevention and treatment of the diseases in the last 50-60 years. In our studies of honey, pollen and propolis, we have found that these products have very high antioxidant values and vary according to the plant species they contain. We also determined that in our microorganism studies propolis was effective against *Salmonella enteritidis*, *Listeria monocytogenes*, *Peptostreptococcus anaerobius*, *Peptostreptococcus micros*, *Lactobacillus acidophilus*,

*Actinomyces naeslundii*, *Prevotella oralis*, *Prevotella melaninogenica*, *Porphyromonas gingivalis*, *Fusobacterium nucleatum*, and *Veillonella parvula* bacteria. On the other hand, we found that thyme honey, a monofloral honey species, is effective against *Staphylococcus aureus*, *Enterococcus faecalis*, *Klebsiella pneumoniae*, *Acinetobacter baumannii* and *Pseudomonas aeruginosa* bacteria. Our work on bee products continues and these excellent products will become a new source of hope and health for the increasingly polluted and artificial world.



### Biography

Aslı Ozkok has her expertise in palynology and bee products. She graduated from Hacettepe University, Biology Department in 2000 as the first of the Department and Faculty. She finished master thesis in 2003 and doctorate thesis in 2009. She went to Queensland University in Brisbane-Australia for her doctoral studies for 6 months with the TUBITAK Scholarship. She also studied in National Food Reference Laboratory of the Ministry of Food, Agriculture and Livestock as a Quality Department Manager. She has been involved in accreditation of the laboratory and she has also established "Pollen Analysis in Honey" analysis at Food and Feed Additives, Authentication and Adulteration Department. Now she is studying Hacettepe University-Biology Department-Bee and Bee Products Application and Research Center as Associate Professor and there are 25 international, 13 national publications and numerous presentations in congresses. She is also assistant editor in master journal Hacettepe Journal of Biology and Chemistry.

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