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### Cytokines pattern of rats infected with *Toxoplasma Gundii* and supplemented with *Capparis Spinosa* honey

**Objectives:** This study was conducted to investigate the cytokines pattern of rats infected with *Toxoplasma Gundii* and supplemented with *Capparis Spinosa* honey (Saudi Arabia) for a period of 28 days.

**Methods:** Immunoglobulin M, immunoglobulin G, and cytokines were detected by using enzyme-linked immunosorbent assays (ELISAs). In addition, the mortality and the morbidity rates were assessed.

**Results:** Oral administration of *Capparis spinosa* honey as a natural food additive was experimentally shown to increase the antibody titer; furthermore, compared with the rats in the control group, the levels of the sera cytokines (IFN- $\gamma$ , IL-1 and IL-6) were consistently higher at day 7 post-infection in the infected rats treated with oral supplements of *Capparis spinosa* honey.

**Conclusion:** Orally administered supplements of *Capparis spinosa* honey increased both the antibody titer and the cytokines (IFN- $\gamma$ , IL-1 and IL-6) levels in rats infected with *Toxoplasma gundii*.

### Biography

Ahmed Hegazi is currently a Professor of Microbiology and Immunology in the National Research Center, Egypt. Prof. Hegazi received his master's degree in 1979, and his PhD in 1981. Hegazi's research work has been focused lately on bee products and their therapeutic effects. Hegazi organized and contributed to national and international research projects since 1977 and up till now; he has been the principal investigator on multiple research projects within the National Research Center. He has published 211 scientific papers and articles in national and international journals. He also served on the board of multiple national and international scientific journals. Dr. Hegazi is also the president of the Egyptian Environmental Society for Uses and Production of Bee Products, secretary of the Egyptian Society of Apitherapy, secretary general of the African Federation of Apiculture Associations, and a member of the International Apitherapy Commission (APIMONDIA). Dr. Hegazi awards; First Class Decoration of Excellence, Egypt, 1995, The Senior Scientist Prize of National Research Center, Cairo, Egypt, 1996, The National Scientific Prize In Biological Sciences, Egypt, 1990, The Scientific Prize of The National Research Center, Cairo, Egypt, 1989, The Second Best Research Paper Award, International Congress of Propolis, Buenos Aires, Argentina, 2000, Main Speaker Award, 10<sup>th</sup> Academic Conference, PRA and NAS (Nippon Apitherapy Soc.) Japan, 2006, 2 Bronze medals from The International Innovation Fair of the Middle East, Kuwait, 2007 Awarded of Ghazi Wad Allah Salon Prize, 2008, Finally awarded the Merit Ward in Medical Sciences, National Research Centre, Egypt, 2016 and have 4 patents.

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