University of Zabol
Graduate School
Faculty of Agriculture
Department of Plant Protection
The Thesis Submitted for the Degree of M.Sc
(in the field of Agricultural Entomology)

Title

Structural and chemical analysis of pollen collected by *Apis florea* in different regions of Hormozgan province

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September 2022

Abstract

With more than 1,100,000 hectares of mountainous forest areas, Hormozgan province has provided appropriate conditions for the dwarf honeybee, *Apis florea* Fabricius (Hymenoptera, Apidae) in the region. Given the role of this species in the pollination of forest plants, this study focused on the structural and chemical analyses of pollens collected by *A. florea* in various areas of Hormozgan province in 1400. In this study, pollen and honeybee samples were collected from 50 honeybee combs depending on the regional conditions and the availability of *A. florea* hives. To investigate the regional vegetation, plants around each *A. florea* hive were sampled up to a distance of 1 km. The plant species were identified using different sources, such as The Flora of Iran, and other available references. Reference pollen slides were prepared from the collected pollen samples separated from honeybee samples and evaluated in terms of pollen abundance, pollen morphology, and the dominant plant species pollinated by *A. florea*. Physicochemical tests, including total phenols, total flavonoids, and antioxidant activity assay, were also conducted on the pollen samples. The results indicated that pollens of interest by the honeybee were highly different in terms of shape, size, gate status, and surface ornamentation in each region. Moreover, the most important plant families of interest to the honeybee were Fabaceae and Salvadoraceae in Jask and Siric areas, Rhamnaceae in Rudan and Minab, palms and other fruit trees (citrus, pomegranate, and local apple) in Bashagard. The physicochemical features of pollens revealed that pollens of the Gaffer and Dognoire region, the Jask Mogh Jangan region, and the Tidar region contained the highest concentrations of phenols (183.4 mg/g), flavonoids (60.4 mg/g), antioxidants (95.1 mg/g), respectively. Altogether, *A. florea* produces high-quality honeybee and can play an effective role in the pollination of plants in various areas of Hormozgan province. It is expected to further protect this valuable genetic stock of our country against threatening this species due to the farmers' lack of knowledge.

Keywords: antioxidant, *Apis florea*, flavonoids, phenols, pollination