

Investigation the structure of vegetative organs and development of reproductive organs of *Haussknechtia elymaitica* Boiss

Zarini M., Majd A^{*}., Tajadod G., Mehrabian S., Jafari S.

Department of Biology, Faculty of Biological Sciences, Islamic Azad University, North Tehran Branch, Tehran, Iran

* E. mail: zarini.mehdi@yahoo.com

Received: 8 May 2017

Accepted: 5 September 2017

Abstract

Haussknechtia elymaitica Boiss. belongs to Apiaceae family. Considering the importance of recognizing the developmental stages in the development of biology knowledge *Haussknechtia elymaitica* Which is a rare and endemic species of Iran, was selected for this research. The samples of vegetative and reproductive organs at different stages of development were gathered and investigated by cell-histology methods. The investigation of the anatomical structure of vegetative organs showed that the secretory cavity are arranged between the parenchymal tissues of the leaf. Section of flower buds revealed that anthers had 4 pollen sacs, the division of pollen mother cell was of the simultaneous type, microspore tetrads were of tetragonal type and the tapetum layer was secretory. The ovary was found to be two chambered and two-carpeled; the ovule to be anatropous and to have one membrane. In embryogenic investigation it was found that the embryos were globular, cordate, cotyledonary and torpedo-shaped and the transition between globular embryos to cordate embryos was found. The vegetative organs were observed to have the general structure of dicotyledons. The development patterns of ovule and embryo sac follow the Polygonum type. Tetrahedral, Tetragonal and Linear microspore tetrads were observed. All stages of embryogenesis were covered in this study.

Keywords: Apiaceae, development, embryogenesis, microspore, pollen grain