Chapter 1

AS AN EXTREME HABITAT FOR PLANTS: GYPSUM SOILS

Ayşenur KAYABAŞ[1]

Gypsophily (edaphic phenomenon on gypsum) is part of Geobotany or even geoecology. Since the term edaphism is used as a synonym for geoecology, the substrate factor is very important. The high percentage of endemic plant species in these particular areas sheds light on understanding the soil-plant relationship in gypsum habitats. Gypsum habitats are undoubtedly the most recurrent motif of the plant ecology research; several researchs worldwide are evidence of this. The definition of alliance *Astragalo karamasici-Gypsophilion eriocalysis*, a gypsum based alliance, is the first study on gypsum in Turkey (1).

Gypsum is a mineral rock composed of calcium sulfate dihydrate, with the chemical formula $CaSO_4.2H_2O$ (2). Gypsum soils are characterized by gypsum contents >5% and the presence of a gypsic horizon in which gypsum is accumulated (3). Gypsum outcrops in Turkey can have different physical characterictis, as they can be exposed as massive gypsum evaporite bedrock, crystalline, anhydrite or another type (Fig. 1.).

Gypsum habitats occur worldwide in arid and semi-arid raegions, covering 100-207 million ha worldwide (4). For example, Turkey (Fig. 2-6.), Spain, Africa (Ethiopia, Somalia, Tunusia, Algeria), Australia, Iran, Iraq, and the region of North America (Chihuahuan Desert) (5, 6).

61 taxa were determined grow upon the gypsum substrate based on the species published in Flora of Turkey Vol. I-XI and new data records (7-21). The substrate was searched as *gypsum*, *gypsaceous*, and *gypseous*. Among these 62 taxa which prefer on gypsum soils 59 of them are endemic. The distribution of the taxa according to families were found to be as follows; Asteraceae, 10; Caryophyllaceae, 10 taxa; Lamiaceae, 7 taxa; Fabaceae, 6; Scrophulariaceae, 5 taxa; Brassicaceae, 4 taxa and others 20 taxa. The gypsophytes contains 70 gypsophile taxa. But according to another new reference, the gypsophytes+gypsoclines is composed of 173 species or subspecies in Turkey (22, Appendix 1).

[1] Dr., Çankırı Karatekin University, Faculty of Science, Biology Department, Çankırı. aysenurkayabas@karatekin.edu.tr

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