

CALCIUM OXALATE CRYSTALS AS AN IMPORTANT CHARACTER OF PERICARP IN COMPOSITAE- A SHORT COMMUNICATION

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Abstract: Calcium oxalate is a chemical compound, which produce crystal in plants and is known as raphides. The chemical formula of calcium oxalate crystal is CaC_2O_4 or $\text{Ca}(\text{COO})_2$. They are not universally present in all parts of the plant organ, but instead they are confined to specific parts and certain plant tissues in some restricted taxa only. Accumulation of calcium oxalate crystal is found to be reported in approximately 1000 different genera of plants (Franceschi and Nakata, 2005). So, presence of this crystal is very important in taxonomic view points, as it is not universally present in all parts of the plant organ and is restricted in certain plant parts. These crystals are usually of the common rectangular type but seldom druses (from cross sectional view of the cypselar wall). Within the family Compositae, calcium oxalate crystal is present in the pericarp and testal region of mature fruit (Cypsela) and it act as a taxonomic marker. Within the cypsela, the distribution of crystals is also very specific. In some cases, they are distributed in the epicarpic zone of cypselas (*Aster thomsonii*, *Brachycome heterodonta*, *Carpesium cernuum*, *Carpesium nepalense*, *Inula ensifolia*, *Buphthalmum speciosissimum*) and in such cases, they are also visible in dry condition from the scanning electron photographs of cypselas. In some another cases, they are only observable from histological structure. In *Anthemis tinctoria*, *Arctium lappa*, *Bothriocline laxa*, *Brachycome campylocarpum*, *Catananche caerulea*, *Elephantopus scaber* and *Tanacetum macrophyllum* crystals are found in different parts of the mesocarpic zone of pericarp. So, the distribution pattern of Calcium oxalate crystals in the cypsela is variable. According to the observation of Martin, Matteo, Daniel, Jakob, Guillaume, Michel, Daniel, Eric and Pila (2012), Calcium oxalate crystal is associated to the detoxification of Calcium in the plant. It is a poisonous substance, which can produce sores and numbing on ingestion and could be fatal. Calcium oxalate crystals may be antagonistic to the formation of phytomelanin pigment in cypselas (Mukherjee and Nordenstam, 2010). Many authors {Hanausek, 1911; Metcalfe & Chalk 1950, 1983; Dormer, 1961; Gochu (1973); Robinson & King (1977); Mukherjee and Nordenstam, (2010) etc.} have been contributed, regarding the distributional pattern of Calcium oxalate crystals in Compositae.

Keywords: Calcium oxalate, Compositae, Plant tissues

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