The survey of synorganization of floral parts and pollinium and pollen germination and tube growth in *Calotropis procera* (Aiton) W. T. (Asclepiadoideae)

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Abstract
Calotropis procera (Asclepiadoideae) is one of important medicinal plants in desert and natural resources which is widely distributed in dry and hot areas of southern of Kerman, Iran. Synorganization of flower is extreme in Asclepiadoideae among angiosperms. Synorganization of flower parts and pollen tube growth were studied. The species contains pentamerous, actinomorphic and bisexual flowers in which calyx is thick, hairy and white-pink. Corolla is saucer shaped and white-violet in which the petals are postgenitally fused in bud but their uppermost zone is reopened at anthesis. Stamens are attached together through stamen tube and pollinia. Anthers are attached to stigma to form gynostegium and filaments form a tube around the gynoecium. Stamen tube contains guide rail and corona for pollinator attraction and movement. Each anther contains two thecae, each one has one pollinium (pollen sac) in which pollen grains are united as compact in collective envelope. Two pollinia, one each from two neighboring anthers are connected together by a translator (consists of a clip and two arms.) and form pollinarium apparatus. Thus, pollen grains are not dispersed singly; pollinia are always transported together. The translator does not consist of cellular structure. The postgenital fusion occurs between the anthers and pentagonal stigma and in the upper zone between the two carpels. Synorganisation of flower parts is mostly postgenital. In vitro pollen germination and tube growth was high on basal medium at 30°C. One or both pollinia from pollinarium apparatus record pollen germination and tube growth. Pollinia growth showed the unilateral organization.

Keywords: Anther, Anther tube, Corona, Istabraq, Gynostegium.