EMBRYOLOGICAL STUDIES IN ERIOCaulON QUINQUANGULARE LINN.

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ABSTRACT

An account of sporogeneses, development of gametophytes, endosperm and embryo in Eriocaulon quinquangulare Linn. is presented.

The unisexual flowers are borne on a terminal globose head. The development of floral parts is acropetal.

The hypodermal archesporium in an anther is one to two-celled. The wall of the mature anther is four-layered; the innermost of these layers functions as the glandular tapetum. The microspore tetrads are of isobilateral and decussate type. A well-developed stomium is present. The pollen grains are generally shed at two-celled stage.

The tenuinucellar ovules are bitegminal and pendulous. The primary archesporium is hypodermal and functions directly as the megasporocyte. The megaspore tetrads are of linear, obliquely linear and T-shaped type. The chalazal megaspore is functional and develops into a Polygonum type of embryo-sac. The antipodals form the most conspicuous part of the embryo-sac and are linear in arrangement.

Endosperm is free nuclear and becomes cellular later. Embryo development is of Asterad type.

INTRODUCTION

The family Eriocaulaceae is referred as the Compositae of monocotyledons because of the constancy of occurrence of the typical inflorescence in the form of globose head with involucre of bracts of different colours. It has been of great taxonomical interest for a long time and a large number of species of Eriocaulon have been described by Fyson (1921). Anatomical details have also been worked out by Solomon (1931). A study of the available literature reveals that very little work has been done on the embryology of the genus Eriocaulon. Only three species have been worked out by Smith (1910), Patel (1964) and Begum (1965).
Embryological Studies in Eriocaulon quinquangulare Linn.

The family includes six genera according to Engler (1897). The genus *Eriocaulon* is placed under the tribe Dipsantheraea with about 193 species (Ruhland, 1903) of which about 50 species are found in South India (Fyson, 1921).

*Eriocaulon* is an extensive genus being found in swampy tracts of land with herbaceous habit. The stem is highly condensed and bears a tuft of radical leaves which in the present species are pinkish in colour.

**Material and Methods**

The material was collected from the marshy areas in the vicinity of Bangalore, during the months of September and November and fixed in Formalin-Acetic-Alcohol. Customary methods of dehydration, infiltration and embedding were carried out. The sections were cut at 4–15 microns thickness. Considerable difficulty was experienced in cutting the material due to the presence of silica. The material was treated with a mixture of 2–4% Hydroflouric acid and 70% alcohol for one week to facilitate cutting. The sections were stained in Heidenhein’s Iron Alum Haematoxylin and Delafield’s haematoxylin with Eosin and Erythrosin as counter stains.

**Observations**

**Flower.**—The unisexual, trimerous flowers are borne on a terminal globose head wherein staminate and pistillate flowers are intermingled.

**Staminate flower.**—The staminate flower consists of six perianth lobes arranged in two whorls of three each. The perianth lobes of the inner whorl are fused to form a tube. There are six stamens surrounding a rudimentary pistil.

**Pistillate flower.**—The pistillate flower has six perianth lobes in two whorls. But unlike the staminate flowers, the perianth lobes of the inner whorl are free and are gland dotted. The ovary is superior, tricarpellary and trilocular with a solitary, pendulous ovule in each locule. The style ends in three radiating stigmatic branches. Staminodes in the form of small projections are seen at the base of the ovary.

The development of floral parts in both pistillate and staminate flowers is in an acropetal succession.

**Microsporogenesis and the development of male gametophyte.**—A young anther is composed of a homogeneous mass of cells. The hypodermal