

A PRELIMINARY INVESTIGATION ON SEED DORMANCY IN *COSCINIUM FENESTRATUM* (COLBR.) (MENISPERMACEAE)

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Coscinium fenestratum (Weniwel, Calumba wood) is naturally found mainly in the forest fringes and disturbed forests in the lowland wet zone of the island. This species has a well-established local market and a potential foreign market for its medicinal properties. As a result of illegal exploitation, destructive collection and the relatively slow growth rate natural populations are disappearing at an alarming rate. The meager supply of propagation material is one of the primary impediments to its mass-cultivation. Seeds of *Coscinium fenestratum* have a relatively long period of dormancy (40-364 days) and germination under natural conditions is less than 20%. This study examined the possible causes of seed dormancy and attempted to develop techniques to overcome it.

Fruits were bagged and collected from the peripheral areas of Sinharaja MAB Reserve, and used for the experiments after four months of storage. Fruits were depulped, surface sterilized with 1 % Sodium hypochloride before storage at 25° C and 70 % humidity.

The average seed weight was 1.76 g and the average seed length and width were 1.72 cm and 1.45 cm respectively. According to seed anatomical studies, the average seed coat thickness was 1.62 mm. The embryo was located deeply within the invaginations of the endospermic tissues. The thick, stony seed coat (integument) and the dry and hard endospermic tissues act as mechanical barriers to the developing embryo. The seed coat consisted of a compactly arranged lignified strongly water repellent macrosclereid layer that impedes the imbibition process.

Bioassays were conducted using *Brassica juncea* L. to examine the presence of germination inhibitory substances in the seeds *C. fenestratum*. Water extracts from the seed coat (A) and the endosperm and embryo tissue (B) were prepared at 2 % and 5 % concentrations. For the controls 2% and 5% sucrose solutions were used. *Brassica juncea* seeds germinated on filter paper soaked in the control solutions gave 100 % germination. Seeds placed on 2% concentrations of extracts of A and B, also gave relatively high germination (80 – 99 %). In contrast, that using the 5 % concentrations of A and B gave very low germination (2 - 5 %), suggesting the presence of inhibitors even after 4 months storage.

Results of chromatographic and spectroscopic investigations of the seed resources of *C.fenestratum* showed that the endosperm contained comparatively high percentage of carbohydrate (67.33%) and lipids (3.12%) suggesting that the seed could remain dormant for a long period. However, the protein (5.03%) content was comparatively low. The amino acid profile was nutritionally balanced and rich with the essential amino acids (His, Gly, Ala, Glu, Pro, Val, Phe, Lue). Experiments on *C. fenestratum* carried out to study the effect of the external application of 5% gibberilic acid, and the red/far red ratio did not enhance germination.

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