PROPORTION OF RAY AND FUSIFORM INITIALS IN THE CAMBIUM OF *CASSIA**

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ABSTRACT

The cambium in the genus *Cassia* surrounded the entire stem in between the xylem and phloem. The cambial structure of six species of the tropical genus *Cassia* has been studied. Two types of initials constituted the cambium : The fusiform and the ray initials. The porportion of one type of initial to the other seems to be species specific.

INTRODUCTION

There is sufficient literature available on the structure of cambium in conifers. PHILIPSON *et al*, (1971). have reviewed the work on cambium and brought out differences between the dicotyledonous and coniferous cambia. Much has yet to be understood about the cambium of tropical dicotyledonous trees. GHOUSE and his co-workers have worked out some structural details of the cambium in Indian tropical trees, (for review GHOUSE & IQBAL, 1977). The present study deals with the proportion of cambial constituents in some tree species of *Cassia*.

MATERIAL AND METHODS

Six species, viz. *Cassia fistula* L. ; *C. grandis* L. ; *C. javanica* L. ; *C. marginata* Roxb.; *C. nodosa* Ham. ; *C. siamea* Lam., easily available in and around Aligarh were selected for the study. Ten blocks of 2 cm square along with some sapwood were taken out with the help of a chisel for each species. The blocks were kept in F.A.A. for fixation and further aspirated after reaching the laboratory. Afterwards the blocks were kept in a mixture of 50% glycerol and 50% ethanol taken in equal volume. Sectioning through the cambial zone was done at a thickness of 10-12 μm in tangential plane, on a sliding microtome. After dehydration in ethanol series (SASS, 1958), sections were stained with tannic acid-ferric chloride (FOSTER, 1934) and mounted in canada balsam.

The area occupied by different types of initials was calculated following the usual method as described by GHOUSE AND YUNUS (1974a).

OBSERVATION AND DISCUSSION

The cambium in all the six species, surrounds the entire stem in between the xylem and phloem. The cambium comprises of two types of cells—the fusiform initials and the ray initials. The former are elongated cells with long tapering ends and multinucleate conditions, while the later ones nearly isodiametric and small cells. The cambium in all the six species is non-storied.

The percentage of fusiform and ray initials was found to be 81% and 19% in *C. fistula* ; 77% and 23% in *C. grandis* ; 76% and 24% in *C. javanica* ; 74% and 26% in *C. marginata*; 72% and 28% in *C. nodosa* ; and 81% and 19% in *C. siamea*, respectively.

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Though the cambium of all the six species is similar in composition and cell arrangement, the component cells differ in their magnitude, frequency, and mode of aggregation. Such a diversity of results can be attributed to the fact that the structure and behaviour of cambium is affected by varying habits of trees (DINWOODIE, 1963).

The present findings on the proportion of ray and fusiform initials conform to some recent reports (GHOUSE & YUNUS 1974a, b, 1976), on various tropical trees of India. Fusiform initials in no case occupied 90% or more of the cambial zone as expected by some foreign workers (cf. KOZLOWSKI, 1971).

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