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ANATOMICAL EVIDENCE FOR REINSTATING SCHIZOSTACHYUM LONGISPICULATUM AND S. BIFLORUM

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ABSTRACT

Based on the differences in their leaf anatomy, it is suggested that *S.* ***longispiculatwm,*** *S. biflorum* and S. *blumei,* should be considered as three distinct **species,**

ABSTRAK

Berdasarkan perbedaan anatomi daunnya, diusulkan agar S. *longispiculatum, S,* ***biflorum*** dan S. ***blumei*** diperlakukan sebagai tiga jenis yang berbeda,

INTRODUCTION

Schizostachyum longispiculatum Kurz was merged with *S. blumei* Nees by Monod de Froideville (1968) but Ridley (1925) discriminated the two species by their flowers. S. *longispictdatum* has lanceolate and mucronulate glumes and glabrous lodicules, but in *S. blumei* the glume and lodicule are absent.

McClure (1936) described a new species *S. biflorum* McClure based on specimen collected by Blume from Mount Salak. This species looks similar to S. *blumei,* but the flowers of these two species are different, because *S. blumei* has one floret in each pseudospikelet whereas *S. biflorum* has two. At Mount Salak, in the area probably visited by Blume I found one grove of *S. biflorum.* Monod de Froideville (1968) did not mention S. *biflorum* among the species occurring in Java.

The present study is aimed at discriminating S. *biflorum, S. longispiculatum and S. blumei* on the basis of the characters of leaf epidermis.

MATERIALS AND METHODS

The material of S. *biflorum* was collected from Mount Salak, whereas

that of *S. blumei* and S. *longispiculatum* came from the Bogor Botanical Garden.

Fresh material was placed in FAA and kept for about 24 hours. To get the abaxial part of the leaves, the adaxial part was removed by scraping with a sharp knife, and 1% safranin in water and 1% fast green in absolute alcohol were used for double staining, followed by serial dehydration with alcohol. The specimens were then mounted in Canada balsam.

RESULTS AND DISCUSSION

In the epidermis of the abaxial part of *Schizostachyum* leaves it was observed that short-cells are pairing with silica-cells. The latter has a dumb-bell .shape and consists of granular bodies. One-celled macro-hairs, two-celled micro-hairs, prickle-hairs and papillae are present. The stomata are arranged in rows, each stoma is covered with 8 papillae. The papilla consists of a deeply hollow long-cell and has an irregular form.

The differences of the epidermal structure of the three species are presented in table I and illustrated in figure 1 A, B, C.

Table 1. Diagnostic microscopic characters of three species of *Schizostachyum*

	S. longispiculatum	*S. blumei*	*S. biflorum*
1. Macro-hairs	rare	abundant	abundant
2. Micro-hairs	the distal cells **equal** to or shorter than the basal cells	the distal cells equal to or shorter than the basal cells	the distal cells longer than the basal cells
3. Prickle-hairs	rare	abundant	abundant
4. Stomata	2--5 rows	2—4 rows	3—4 rows

The anatomical characters elucidated would seem to indicate that the three species are closely related and quite similar in that the individual stoma is covered by 8 papillae and that the shape of micro-hairs, papillae, prickle-hairs and stomata are irregular. However, the size and

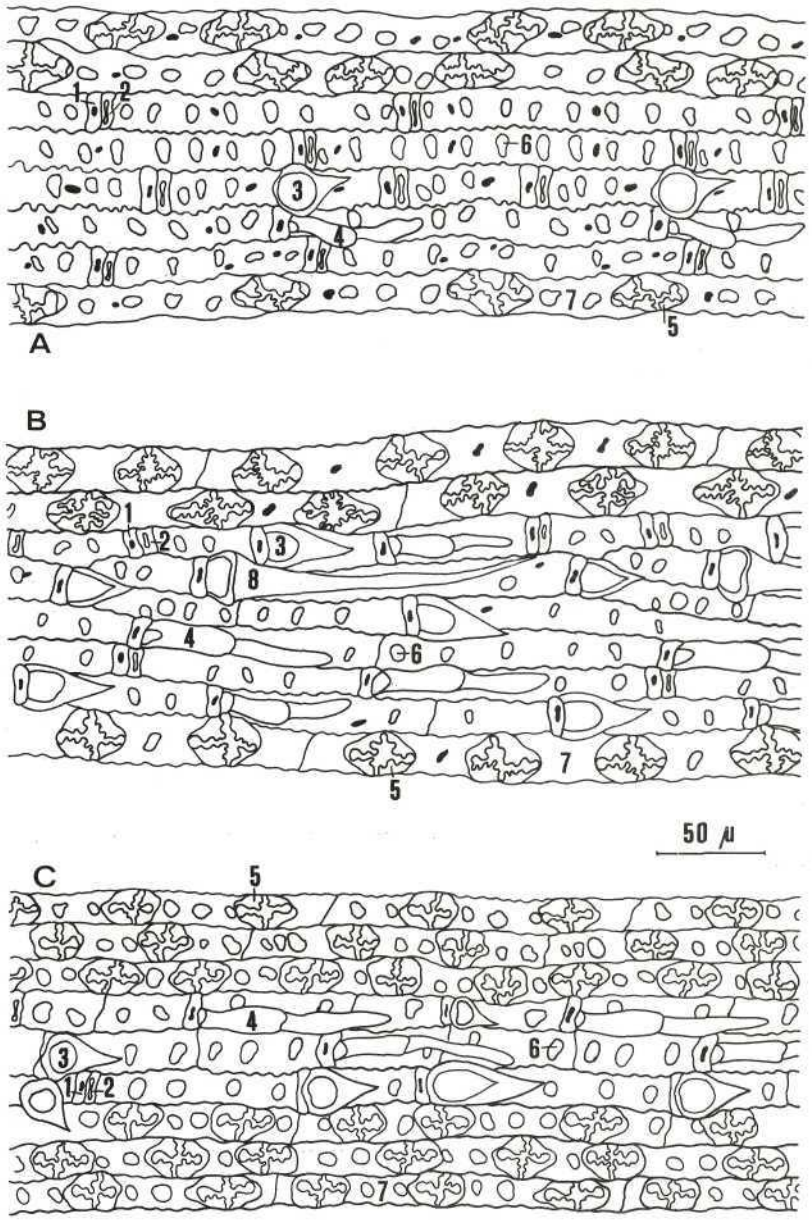

FIG. 1. A. Abaxial leaf epidermis of *Schizostachyum longispiculatum* Kurz, *B. S. blumei* Nees, C. *S. biflorum* McClure, 1. short-cells, 2. silica-cells and silica-bodies, 3. prickle-hairs, 4. micro-hairs, 5. stomata, G. papillae, 7. long-cells, 8. macro-hairs.

abundance of micro-hairs, prickle-hairs, papillae and stomata are different in *S. longispiculatum, S. blumei* and *S. biflorum.* It is justified, therefore, to keep S. *longispiculatum* and S. *blumei* as two distinct species, thus supporting Ridley's (1925) conclusion. Similarly the anatomical characters also support the flower characters in distinguishing S. *blumei* from S. *biflorum.*

Further observations on the anatomy of leaf-epidermis of other species of *Schizostachyum* reveal that the above anatomical features can also be used in characterizing and discriminating species. These are summarized in the following key.

KEY TO THE SPECIES OF SCHIZOSTACHYUM

1. Macro-hairs and prickle-hairs abundant
   2. Distal cells of micro-hairs longer than the basal cells
      3. Papillae relatively small, stomata 2—3 rows S. *brachycladum* (Kurz) Kurz
      3. Papillae relatively big, stomata 2—5 rows ..... S. *biflorum* McClure
   2. Distal cells of micro-hairs longer than the basal cells
      4. Stomata 2—4 rows ..... *S. blumei Neen*
      4. Stomata 4—6 rows ..... *S. lima* (Blanco) Merr.
1. Macro-hairs and prickle-hairs rare
   5. Papillae abundant ..... S. *longispiculatum* (Kurz) Kurz
   5. Papillae rare
      6. Miero-hairs with 2 cells ..... *S. zollingeri* Steud.
      6. Micro-hairs with 3 cells, occasionally with 2 cells ..... *S. eaudatum* Back.

I should like to thank Dr. Soejatmi Dransfield for kindly supervising this study.

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