The significance of pollen morphology in the taxonomy of the genus *Eugenia* Linn. (Family: Myrtaceae)

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**ABSTRACT** The pollen grains of *Eugenia* species from both the Old and New World were examined. They are more or less uniform although slight differences can be detected. In some instances, it is possible to distinguish the grains from the two areas. The width of colpus, exine thickness and exine sculpture may be taxonomically useful in distinguishing the species. Findings of the study show that the structure of colpus is not a significant taxonomic character in identifying the pollens from the two geographical areas.

**INTRODUCTION**

The taxonomic value of the study of pollen grains is well established [1, 2, 3, 4, 5, 6, 7, 8] and the study of pollen morphology has advanced knowledge in morphological botany or has supplemented the taxonomic description of plants. Erdtmann [1] has long been the foremost proponent of the concept that the science of palynology can be a valuable tool to systematics. Pollen grains have various morphological characteristics which are of considerable taxonomic value and may aptly be used to differentiate and establish relationships among taxa ranging from families to species.

The present work was undertaken to survey, compare and discuss the pollen morphology of both the Old and New World representatives of *Eugenia*, particularly with regard to recent delimitation and definition of taxa.

**MATERIALS AND METHODS**

The pollen of both Old and New World species of *Eugenia* was examined by light (LM) and scanning electron microscopy (SEM). The Old World (Malaysian) species examined were *E. castanea* Merr., *E. fastigiata* Bl. Koord. & Valet., *E. cerasiformis* (Bl.) DC., *E. spicata* Lamk., *E. malaccensis* Linn., *E. grandis* Wight., *E. virens* (Korth.) Koord & Valet., *E. leucocylon* Korth. and *E. papillosa* Duthie. Representatives from the New World (South American) were *E. prasina* Berg., *E. mugensis* Berg., *E. koepferi* Standl., *E. axillaris* (Sw.) Willd., *E. choapamensis* Standl., *E. doubledayi* Standl., *E. glomerata* Spreng. and *E. hirta* Berg. Specimens examined were from Kew (K), Leiden (L), Kepong (KEP), Sandakan (SAN), Sarawak (SAR) and Singapore (SING). Mature anthers were treated according to Erdmann’s acetylation method [1].

**RESULTS AND DISCUSSION**

Table 1 shows main morphological characters between pollen of the Old and New World species. Illustrations from both scanning electron and light microscopy are presented in Figs. 1-32. In general, the pollen grains are small, isopolar, radially symmetrical, tricolporate and syncolporate. The colpi are well-defined in all species examined, and are wider among the Old World as compared to the New World (Table 1). Patel *et al.* [9] recognized three main types of grain in his study on some taxa of the Myrtaceae, i.e. longicollate, syn- or parasyncolpate and brevi- or brevissimicolpate. In the present study, only syncolpate grains were observed.

Pike [10] used the nature of the colpi as a generic character. Species from the Old World had either syncolpate or parasyncolpate pollen while the other group had longicollate pollen. The present results do