

Taxonomic Status of *Rhipsalis baccifera* in Sri Lanka

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Introduction

As a part of the conservation, domestication of wild plant as an ornament is fascinating. *Rhipsalis baccifera* (Muller) Stearn has high demand as an ornamental plant and it is used as potted plant, house plant or in ornamental gardens (Bricker, 1996). Apart from their ornamental value, *R. baccifera* has value as a powerful ayurvedic medicine which is still used in indigenous community. It is generally known as "Nawahandi" and often used for fractures and dislocations (Department of Ayurvedic, 2004). Furthermore, it is good medicine for chest complains, body cleansing and stomach complains (Nzue, 2009). Although the latest revision of Flora of Ceylon Vol. XIII (Weerasooriya, 1999) recorded two sub species of *R. baccifera* as sub species *baccifera* and sub species *mauritiana* in Sri Lanka, the available information is not strong to distinguish these two sub species. The herbarium specimens at the National Herbarium, Peradeniya also do not either provide evidences satisfactorily or strong support to distinguish these two sub species. Therefore this study was carried out to evaluate the taxonomic status of the native species *Rhipsalis baccifera*.

Methods

For the taxonomic study, the specimens were collected from different locations such as Badulla, Rathnapura, Kandy, Matale, Kegalle, Kalutara and Nuwara Eliya within Sri Lanka. A total of 53 characters were evaluated from the major categories of morphological characters of stem, flower, fruit and seed. Data were subjected to cluster analysis using SAS 9.1.3 program.

Results and discussion

Out of the 53 characters evaluated, 13 characters (Table 1) were selected for analysis.

It was found that other 39 characters cannot be used for the analysis because of the absence of characters in the samples for evaluation and some characters did not significantly vary among the individuals.

Table 1: Morphological differences of group A and B

| Major Characters | Group A | Group B |
|--|----------------------------------|---------------------|
| 1. Growth habitat | Epiptytic or Lithophytic | Epiptytic |
| 2. Colour of stem | Light green, green or dark green | Green or dark green |
| 3. Diameter in 1 st branching point (cm) | 2.75– 6.16 | 4.00– 7.66 |
| 4. Length of the bunch (cm) | 32.05– 129.16 | 150.56– 223.80 |
| 5. Bunch shape | 1, 2 or 3 | 3 |
| 6. Basal point morphology | 1, 2 or 3 | 2 or 3 |
| 7. 1 st branching point behavior | 1, 2 or 3 | 1, 2 or 3 |
| 8. No of branches | 2– 38 | 2– 8 |
| 9. No of branching points | 2– 6 | 4– 6 |
| 10. No of sub branches in 1 st branching point | 2– 8 | 2– 7 |
| 11. No of sub branches in 2 nd branching point | 2– 6 | 4– 7 |
| 12. Length within basal point and 1 st branching point (cm) | 5.13– 57.40 | 17.30– 53.00 |
| 13. Length within 1 st and 2 nd branching point (cm) | 3.43– 35.50 | 32.20– 58.50 |

The resulting two clusters A and B showed in Figure 1 were obtained by the evaluation based on the vegetative characters shown in Table 1.

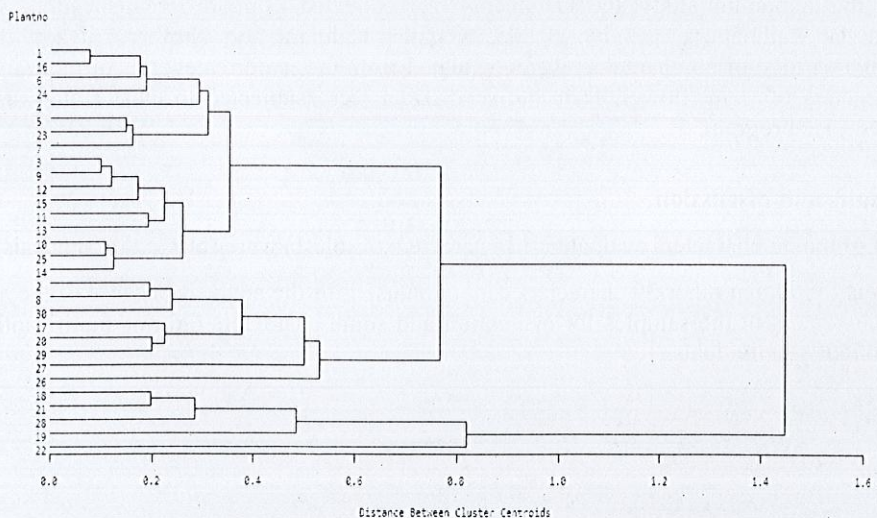


Figure 1: Dendrogram obtained from the cluster analysis using morphological characters

The dendrogram is not providing strong support to distinguish the taxonomic status of sub species of *R. baccifera* in Sri Lanka, because it is only based on the limited vegetative characters about 13. When comparing the morphological characters of *R. baccifera* sub species *baccifera* defined by Cota and Bomfim (2010) and the characters identified in the present study, ranges of the characters are quite different.

According to Cota and Bomfim (2010), seed length, width, seed shape, outer surface of seeds and scanning electron photomicrographs provided the information for the identification of sub species *baccifera* and the sub species *mauritiana*. The seed length, width and light and dissecting photographs of specimens collected in Sri Lanka in this study closely resembled to the sub species *mauritiana* as shown in Plate 1 and Table 1. The Gondwanan relict provides evidences for further confirmation.

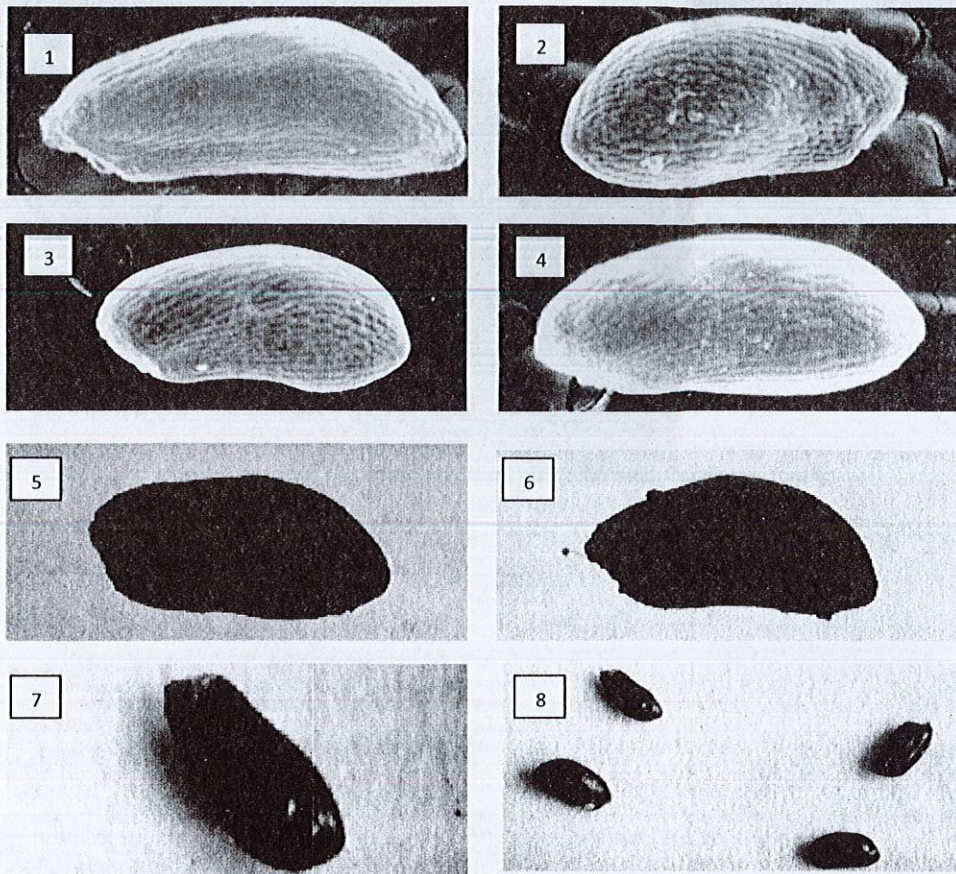


Plate 1: Seed morphology of *R. baccifera*

1, 2= Scanning electron photomicrographs of subsp. *baccifera*; 3, 4= Scanning electron photomicrographs of subsp. *mauritiana*. Source: Cota and Bomfim (2010).

5, 6= Light microscopic photographs of present study (10×4); 7, 8= Dissecting microscopic photographs of present study (10×4).

Table 2: Seed character comparison of subsp. *baccifera*, subsp. *mauritiana* and present study

| Character (mm) | Subsp. <i>baccifera</i> * | Subsp. <i>mauritiana</i> * | Present study |
|----------------|---------------------------|----------------------------|---------------|
| Seed length | 1.1 ± 0.1 | 1.2 ± 0.1 | 1.3 ± 0.1 |
| Seed width | 0.6 ± 0.1 | 0.6 ± 0.04 | 0.6 ± 0.08 |

Source: Cota and Bomfim (2010)

Conclusions

This study identified one sub species of *R. baccifera* present in Sri Lanka. The available sub species identified further as the *Rhipsalis baccifera* sub species *mauritiana* in Sri Lanka.

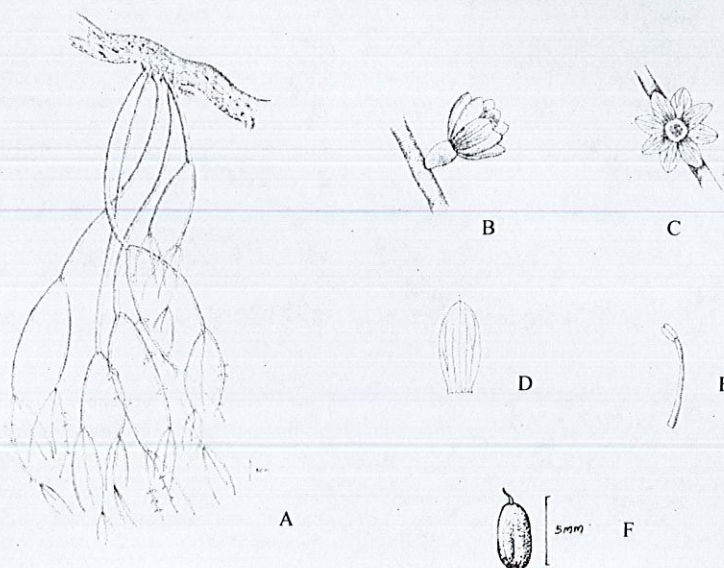


Figure 2: *Rhipsalis baccifera* subsp. *mauritiana*.

A= bunch with fruits; B= lateral portion of flower (1×8); C= spatial portion of flower (1×8); D= lateral portion of sepal (1×16); E= Lateral portion of stamen (1×16); F= fruit.

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