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STUDIES ON ROOT MORPHOLOGY OF *CHLOROPHYTUM* Ker-Gawl.

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The species of *Chlorophytum* Ker-Gawl. are known as drug safed musali in different indigenous systems of medicine, such as Ayurveda, Siddha, Unani and Tibbi. It is a controversial drug being sold in the market, @ Rs. 1000-2500 per Kg. Mainly used as health tonic, galactgogue, and aphrodisiac, it is very rich source of proteins, steroids, saponins, carbohydrates and alkaloids. For standardization of drug safed musali, correct botanical identification is needed. Ten species of *Chlorophytum* Ker-Gawl have been collected from various places of Maharashtra and are identified and classified on the basis of their root morphology. The key of root tubers is first time prepared and communicated in the paper.

Keywords : *Chlorophytum* Sps; Key; Root morphology.

The root tubers of species of *Chlorophytum, Asparagus* and roots of *Orchis latifolia* Linn. (orchid), *Salmalia malbarica* Schoot. are being sold in the market under the name safed musali. Despite the drug safed musali useful in health tonic, aphrodisiac and galactogogue[1-2], it has not yet been investigated so far. Because of its name safed musali, there is a controversy regarding its identification and medicinal use. It is being sold in the market @ Rs. 1000-2500 per Kg. Being controversy in the name and high price, there is a lot of scope for adulteration in this precious drug. Hence correct botanical identification and standardisation of the drug safed musali is needed. Ten species of *Chlorophytum* have been collected from various places of Maharashtra, identified and classified with the help of previous literature of various workers[3-28]. Review of literature revealed that lot of work has been done on morphology and taxonomy of these species. Because of therapeutic and export values of drug safed musali, detailed morphological studies on roots of ten species of *Chlorophytum* has been carried out, further classified and newly reported in this present investigation.

KEY BASED ON ROOT MORPHOLOGY

1. Root tubers cylindric, long and slender, 1 - 1.5" long.
   - 1a. Size of root tubers 0.6-0.8 cm and number of tubers reaching up to 64.....***C. borivilianum*** **Bake. Fig-1**
   - 1b. Size of root tubers 0.6-1 cm and number of tubers reaching up to 50.....***C. bharuchae*** **Ans. Ragh. & Hem. Fig-2**
   - 1c. Size of root tubers 0.2-0.4 cm and number of tubers reaching up to 25-35.....***C. orchidastrum*** **Lindl. Fig-3**
2. Root tubers cylindric, slender and short 2 - 5" long.
   - 2a. Size of root tubers 0.2-0.4 cm up to 5" long, tapering at both the ends and number of tuber reaching up to 15-20.....***C. arundinaceum*** **Bake. Fig-4**
   - 2b. Size of root tubers 0.1-02 cm, and 4" long and number of tubers reaching up to 6-10.....***C. glaucum*** **Dalz. Fig-5**
   - 2c. Size of root tubers 0.1-02 cm, 2" long and number of tubers reaching up to 12-15.....***C. attenuatum*** **Bake Fig-6**
3. Root fibrous, long and slender.....***C. glaucoides*** **Blatter. Fig-7**

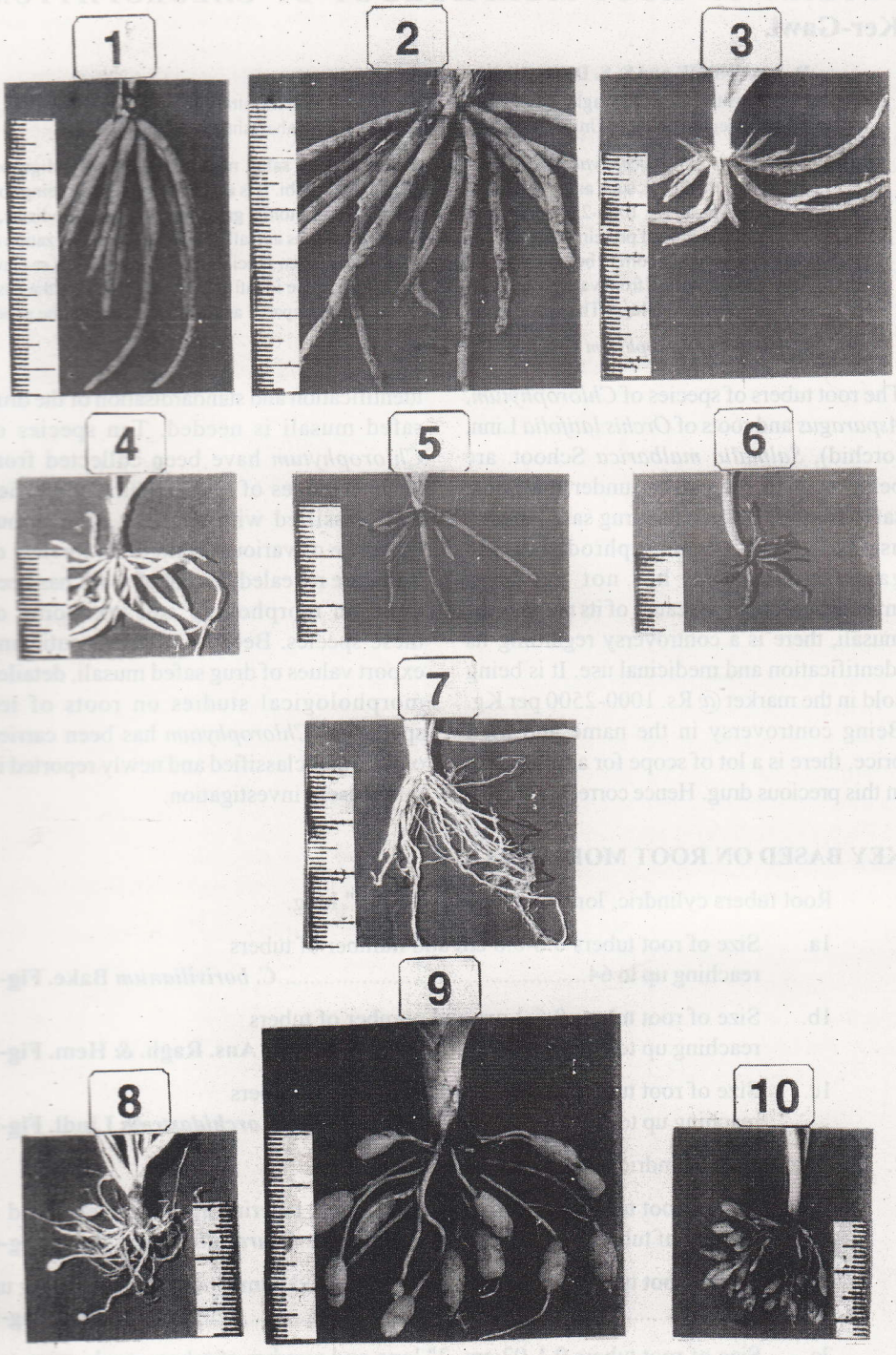

Fig. 1-10. 1. *Chlorophytum borivilianum*; 2. *C. bharuchae*; 3. *C. orchidastrum*; 4. *C. arundinaceum*; 5. *C. glaucum*; 6. *C. attenuatum*; 7. *C. glaucoides*; 8. *C. breviscapum*; 9. *C. laxum*; 10. *C. tuberosum*.

4. Root fibrous, long, slender 1 - 2" long and ending with tubers, number of tubers reaching up to 20-80.

   4a. Root fibrous, 2" long and ending with ellipsoidal tubers, number of tubers reaching up to 20.....***C. breviscapum* Dalz.. Fig-8**

   4b. Root fibrous, 1" long, ending with long ellipsoidal tubers with tapering ends and number of tubers reaching up to 20-30.....***C. laxum* R. Br. Fig-9**

   4c. Root fibrous, 1.5" long and ending with ellipsoidal tubers, number of tubers reaching up to 60-80.....***C. tuberosum.* Bake. Fig-10**

The foregoing key of root tuber morphology is highly significant for the correct botanical identification of *Chlorophytum* species for further use.

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References

1. Nadakarni A K 1927, K.M. *Nadakarni's Indian Materia Medica*, Popular Book Depot., Lamingaton Road, Bombay, 3rd. Edtn. **1**. 208 & 209.
2. Chopra R N, Nayar S L and Chopra I C 1956, *Glossary of Indian Medicinal Plants* CSIR. New Delhi : 218.
3. Almeida S M 1990, *Flora of Sawantwadi* **2** 36
4. Ansari M Y, Raghawan R S and Hemadri K 1970, *Indian Forester* **96** 304
5. Boraiah G and Fathima T 1971, *Curr. Sci.* **40**(22) 608
6. Cooke T 1958, *Flora of Presidency of Bombay* B. S. I., Calcutta, **3** : 280-289.
7. Deshpande S, Sharma B D and Nayar M P 1995, *Flora of Mahabaleshwar and adjoining, Maharashtra.* **2** : 596-598.
8. Diwakar P G and Sharma B D 2000, *Flora of Buldhana District* : 304-305.
9. Dress W J 1961, *Chlorophytum in cultivation, Baileya* **9** 29
10. Hooker J D 1894, *Flora of British India* **6** 333
11. Kothari M J and Mortify J S 1996, *Flora of Raigad District, Maharashtra state* : 403-404.
12. Kulkarni B G 1998, *Flora of Sindhudurg* : 451-452
13. Lakshminarasihan P and Sharma B D 1991, *Flora of Nasik District* : 472-473.
14. Morais W and Reilly Jacqueline 1978, *Kew Bull.* **32** 653
15. Mathew P W and Thomas K J 1974, *New. Bot.* **1** 34
16. Mukharjie N 1975, *Bull. Bot. Soc. Bengal.* **29** 75
17. Naik V N 1998, *Flora of Marathwada* **2** Edtn. **1** : 860-862.
18. Naik V N 1976, *Bot. Journ. of Linn. Soc.* **72** 45
19. Naik V N 1974, *Curr. Sci.* **45** 161
20. Naik V N 1977, *Bot. Journ. Linn. Soc.* **74** 297
21. Pahuja A N and Kumar V 1969, *Curr. Sci.* **38** 369
22. Panigrahi G 1975, *Kew. Bull.* **30** 563
23. Pradhan S G and Singh N P 1999, *Flora of Ahmednagar District* : 522-23.
24. Sharma A K and Raju D T 1967, *Bull. Bot. Soc. Bengal* **21** 37
25. Sharma B D, Karthikeyan S and Singh N B 1996, *Flora of Maharashtra state Monocotyledons* : 121-130.
26. Sheriff A and Chennaveeraiah M S 1972, *Nucleus* **15**(1) 39
27. Sheriff A and Chennaveeraiah M S 1975, *Cytologia* **40**(2) 401
28. Sundara Raghavan R, Ansari M Y and Kambale S Y 1977, *Curr. Sci.* **46** 534