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MOMORDICA CYMBALARIA HOOK.F. –MORPHOLOGICAL STUDY OF THE GERMPLASM FOR CONSERVATION STUDY

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ABSTRACT :

Momordica cymbalaria is one of the controversial species of family Cucurbitaceae. Presently, it is described as *Momordica cymbalaria* Hook.f. It shares the generic characters from *Luffa* as well as *Momordica*. Giving correct identity or commenting upon the systematics of the species is out of scope of present investigation. Variations are recorded in phenology, sexual expressions, leaf architecture, fruit and seed attributes as well as the floral structures. Tuber morphology and propagation efficiency as well as variation is recorded for other Momordicas. All these reports indicate the necessity of data collection on morphology of the wild species of Cucurbitaceae prior to conservation studies.

INTRODUCTION

While dealing with a wild species one should be careful with respect to its correct identity. There may be possibility of morphological and other variations which are caused by number of factors including 'ecological conditions'. *Momordica cymbalaria* is one of the controversial species of family cucurbitaceae. Giving correct identity or commenting upon the systematics of the species is out of scope of present investigation.Therefore, it is essential to generate baseline data on morphology of the species. In cucurbitaceae, many species are cultivated on wide scale while number of species are endemic i.e. *Momordicasahyadrica* (Kattukunel and Antony 2008), some of the species are growing on wide ecological amplitude while some of them grow even on nutrient deficient condition. All these conditions are causing considerable morphological variations, in the species. Such type of reports are published by Kendrick *et. al.* (2005) in case of *Luffa* species.

Material and Methods

A literature survey was made to know the sites of species occurrence. Then number of sites were visited to locate the species in field. Based on occurrence few sites were selected for further analysis. The sites were visited repeatedly. All the morphological, phenological characteristics were recorded from time to time. The morphometric study was carried out in Botany Department of Shivaji University and the data was further used for comparison.

Results and discussion

The species *M. cymbalaria* is having two different synonyms i.e. *Luffa tuberosa* Roxb. and *Momordicatuberosa* (Roxb) cogn. It clearly indicates that there are controversies with respect to its generic position. Therefore, data is generated on some of the key characteristics of genera *Momordica* of *Luffa*. Similarly characters of *M. cymbalaria* are also observed carefully for comparison. The data is presented in Table 2.1. which indicate that *M. cymbalaria* shares some characters from *Luffa* and some characters from *Momordica*. Some characters are different.

Table No. 2.1: Comparative account on the key characteristics of the genera *Luffa* and *Momordica* as well as the characters exhibited by *Momordica cymbalaria*

Characters	*Luffa* sp.	*Momordica cymbalaria*	*Momordica* sp.
Habit	•Seasonal	•Perennial	•Perennial
Root	•Non tuberous	•Tuberous	•Tuberous and Non tuberous
Stem	•5-angled, glabrous with sharp angles	•Slender, scandent, striate, branched, subglabrous, angled at maturity.	•Very slender branched striate.
Tendrils	•Trifid	•Simple	•Simple or bifid
Leaves	• Orbicular, reniform in outline, 10-20cm long often broader than long palmately 5(rarely 7-lobed) the lobes acute or acuminate lobulate and distantly denticulate, deeply cordate at the base.	• Leaves orbicular, reniform in outline, 2-5cm in diameter glabrous, cordate at the base. obtusely but not deeply 5-lobed, submucronate at the apex	• Leaves membranous orbicular, reniform in outline, 3-10cm cordate at the base. Palmate 3-5 lobed the lobes rhomboid deeply lobulate, acute and mucronate at the apex.
	•Leaves with cystolith at lower epidermis	•Leaves without cystolith at lower epidermis	•Leaves without cystolith at lower epidermis
Flowers	•White in color	•White but yellow at the centre(base of the petal)	•Yellow
	•Flowers ebracteate	•Flowers ebracteate	•Male flowers bracteate
Stamens	•Stamens-5	•Stamens-3	•Stamens-3
Fruit	•10 angular / tubercled	•8 angular smooth but ovary hairy	•Muriculate or echinate but never angular
	•Fruit dehiscence by apical stopple	•Fruit dehiscence not by apical stopple	•Fruit dehiscence by not apical stopple
	•A spongy fibrous skeleton at maturity	•No fibrous skeleton but fibre contents are considerable	•No fibrous skeleton
	•Fruit pulp is present	•Fruit is not soft and fleshy. At maturity pulp absent or very less.	•Fruit pulp present
Seed	•Many	•Seeds 3-5 only	• Many
Chromosome number	•n=13	•n=8 (Mehetre and Thombre 1980) •n=11(Ayyangar and Sampathkumar 1978) • Present study n = 11.	•n=11 *Momordica charantia* (Shibita, 1962) •n=11 *Momordica balasmina* (Jha and Trivedi, 1989) •n=14 *Momordica dioica* (Beevy and Kuriachan, 1996) •n=14 *Momordica cochinchinensis* (Jha *et al.*1989)

Colour is easily visible character of a flower and it is very much significant in identification of *Luffa* and *Momordica*. Flowers of *Luffa* are always white, while in *Momordica* they are always yellow. But in *M. cymbalaria* the base of petal is yellow and remaining large portion is white in colour. In *M. cymbalaria* ovary is hairy but fruit becomes angular and dehiscence of fruit is random from the angles. There is no presence of stopple. The fruits of *Luffa* produce a typical fibrous skeleton at maturity but the fruits of *Momordica* are fleshy without any rigid fibrous skeleton. Therefore, fruits are not soft and fleshy fruit pulp is very small in amount at younger stage and absent at maturity. In contrast to *Luffa* and other *Momordica*s the seed number is very less in *M cymbalaria*.

Conclusion

Morphological features are thoroughly documented and attempt has been made to compare *Luffa* and *Momordica* species by keeping the view that one should be careful with respect to correct identity of plant species in question. In this chapter emphasis is given on morphological features of stem, leaves, flowers, fruits, tuber and seeds.

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