



A new combination and an updated identification key for *Rhabdocaulon* and the differences from *Hoehnea* (Lamiaceae, Nepetoideae, Mentheae, Menthinae)

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A new combination for the recently described *Hoehnea grandiflora* Funez & Hassemer (2018: 160) is proposed in *Rhabdocaulon* (Bentham, 1834: 411) Epling (1936: 134). Characters distinguishing *Rhabdocaulon* and *Hoehnea* Epling in Epling & Stewart (1939: 8) are outlined and an updated identification key is provided for *Rhabdocaulon*.

The New World Menthinae form a well-supported monophyletic clade with some groups like *Cunila* D.Royen in Linnaeus (1759: 1359), *Hedeoma* Persoon (1806: 131) or *Clinopodium* Linnaeus (1753: 587), revealed as non-monophyletic and overall poor resolution among genera (Bräuchler *et al.* 2010), a situation that did not improve much in subsequent studies (*e.g.* Drew *et al.* 2017). Some of the genera restricted to SE South America like *Glechon* Sprengel (1827: 222), *Hersperozygis* Epling (1936: 132), *Hoehnea* and *Rhabdocaulon* form morphologically well-defined groups and in lack of reliable alternative evidence are to be regarded as distinct and natural units for the time being.

In this situation, *Hoehnea grandiflora* has recently been described as a narrow endemic from Santa Catarina state in southern Brazil (Funez & Hassemer 2018). There is little doubt this is a distinct, newly discovered member of Menthinae, and thus a valuable contribution to our knowledge of the flora of Brazil, but it simply has been misplaced. Overall habit at a first look, and many other characters at a second look, place the species in the genus *Rhabdocaulon*, while it lacks the major diagnostic characters for *Hoehnea* (Epling 1936, Epling & Stewart 1939, Harley *et al.* 2004). All features listed for *Rhabdocaulon* in Table 1 are also found in *Hoehnea grandiflora*. To maintain the two genera clearly delimited by morphology, the corresponding new combination is proposed here. The number of species recognized in *Rhabdocaulon* thus adds up to eight, all of them occurring in, but not restricted to, Brazil: *R. coccineum* (Bentham, 1834:) Epling (1936: 135), *R. denudatum* (Bentham 1834: 412) Epling (1936: 136), *R. erythrostachys* Epling (1936: 136), *R. gracile* (Bentham 1834: 412) Epling (1936: 136), *R. lavanduloides* (Bentham 1834: 411) Epling (1936: 136), *R. stenodontum* (Briquet 1907: 612) Epling (1936: 136) and *R. strictum* (Bentham 1834: 362) Epling (1936: 137). While most of the species are clearly distinct it remains to be tested whether *R. gracile* and *R. stenodontum* are sufficiently alike to be lumped together in one species. An updated key based on that of Epling (1936) is provided. This manuscript forms the starting point of a series of contributions to clarify the status of South American Menthinae.

Rhabdocaulon grandiflorum (Funez & Hassemer) Bräuchler, *comb. nov.*

≡ *Hoehnea grandiflora* Funez & Hassemer, *Phytotaxa* 349: 160. 2018.

Type:—BRAZIL. SANTA CATARINA: Rancho Queimado: Morro da Boa Vista, próximo ao posto da polícia rodoviária federal, 10 February 2016, L.A. Funez & G. Hassemer 5267 (holotype FURB-51113).

Note: There are similarities to *Rhabdocaulon coccineum* and *R. denudatum* with respect to growth form and arrangement of inflorescence. Structure of the corolla in *R. grandiflorum* differs considerably, because it is not continuously curved in one direction and gradually widened towards the throat above as in the latter two species, but is more or less straight with a tube, which is cylindrical from the base up to the middle and abruptly widening above.

Identification key for the species of *Rhabdocaulon*

1	Corolla tube 17–28 mm long.....	2
-	Corolla tube 4–13 mm long.....	4
2	Corolla tube 17–18 mm long.....	<i>R. grandiflorum</i>
-	Corolla tube 22–28 mm long.....	3
3	Corolla red, calyx lobes obtuse, inflorescence lax.....	<i>R. coccineum</i>
-	Corolla usually cream to white or very pale yellow, calyx lobes acute, inflorescence condensed.....	<i>R. denudatum</i>
4	Corolla tube 4–4.5 mm long, calyx tube 2.5 mm long, almost glabrous.....	<i>R. strictum</i>

-	Corolla tube 6–13 mm, calyx tube 4–5 mm long, pubescent	5
5	Calyx tube subsericeous outside with appressed hairs, leaves prominent and persistent	6
-	Calyx tube with spreading short hair outside, very few leaves if any	7
6	Corolla tube 8–13 mm long, calyx lobes 1–2.5 mm long, leaves mostly 12–35 mm long, linear-lanceolate to elliptic	
 <i>R. lavanduloides</i>	
-	Corolla tube 6 mm long, calyx lobes 0.8 mm long, leaves mostly 8–14 mm long, linear-oblong	<i>R. erythrostachys</i>
7	lower calyx lobes 1–1.8 mm long, tube slightly constricted below annulus, spike lax	<i>R. gracile</i>
-	lower calyx lobes 1.5–3 mm long, tube not constricted, spike condensed	<i>R. stenodontum</i>

TABLE 1. Major diagnostic characters distinguishing the genera *Rhabdocaulon* and *Hoehnea*.

	<i>Rhabdocaulon</i>	<i>Hoehnea</i>
Stems	erect, virgate, angles not ciliate, strongly marginate	weak, almost procumbent, angles ciliate, weakly marginate
Leaves	ovate-lanceolate to narrowly linear, lamina broadest above base (base cuneate)	deltoid-lanceolate, lamina broadest at base (base cordate)
Bracts	inconspicuous (very rarely the lowest more leaf-like, but those never as large as stem leaves)	leaf-like
Calyx tube	cylindrical-costate, regular in cross-section	turbinate-campanulate, 5-angled in cross-section
Calyx veins	equal	5 prominent, others inconspicuous (thus calyx appearing 5-angled)
Calyx indumentum	almost glabrous to hispidulous or hirtellous to appressed silky	pilose-setose on prominent veins
Calyx lips	never more than half the length of calyx tube	equalling length of calyx tube

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