Kroenleinia Gen. nov. J.Lodé 2014 : A new genus for a well-known cactus: *Echinocactus grusonii*

Kroenleinia grusonii, A necessary name for a misleading taxon. Exotic garden of Monaco. © J.L

KROENLEINIA J.Lodé 2014 (Cactoideae-Cacteae)

• ETYMOLOGY

A genus dedicated to Marcel Kroenlein (1928-1994), Monegasque, director of the famous Jardin Exotique de Monaco (1969 to 1993), where we can admire magnificent specimens.

• BASIONYM

Echinocactus grusonii Hildmann H., in Monatsschrift für Kakteenkunde 1: 4 (1891). (**Lectotype** : illustr. cited, plant in Hort. Gruson, Magdebourg, Germany).

• DESCRIPTION

Monotypic genus of globular to short columnar plants up to 2 m high, flat to slightly depressed at the apex, solitary or branched from the base in age. Stems with many ribs (up to 40), apex densely covered with wool. Large areoles, generally elongated, close, joined in adult plants, without nectar glands. Spines are strong, cross-ribbed, centrals and radials same length.

Flowers diurnal, appearing in the apical wool, shortly funnel-shaped to bell-shaped, yellow, with scales with brownish thorns, pollinated by bees. Fruits elongated, fleshy with a white pulp, becoming dry when mature, indehiscent, densely covered with scales and wool. Seeds oval, smooth, shiny, brown.

• COMMENTS

Echinocactus is a genus in which has long included ***K. grusonii***, which is a problematic genus: despite an apparent homogeneity, ***Echinocactus*** is polyphyletic. Molecular data of Butterworth *et al*. (2002) confirm the conclusion of Cota & Wallace (1997) on the fact that *Echinocactus grusonii* is more related to members of the ***Ferocactus*** genus (especially ***F. histrix*** and ***F. glaucescens***) than the other species of the clade ***Echinocactus***. The hypothesis of a hybrid origin for *E. grusonii* leaves little doubt. Molecular study is based on chloroplast DNA alone, as it is inherited from the mother plant, it is likely that we are in presence of a hybrid between ***Ferocactus*** (mother plant) and ***Echinocactus***.

Of course, this hypothesis would be strengthened if the research is focused on other DNA markers, which would include the nucleus. So the expectation prevails, but we can already say that we are probably in a statement of reticulate evolution within the genus ***Echinocactus***.

All this does not preclude adding that if *Echinocactus grusonii* is a hybrid, it is now a separate species. Although we have identified possible links of relationship, its flowers and fruits make it morphologically closer to the genus ***Echinocactus*** (including ***E. polycephalus***) than ***Ferocactus***. On the contrary, the seeds do not resemble those of ***E. polycephalus***. Although it is possible to change its taxonomy and create a new genus for it, we still lack additional data to go further, so it is given *Echinocactus grusonii* a kind of status “wait and see”.

But in 2011, in their respective molecular studies, Hernández-Hernández *et al*. and Barcenas

Kroenleinia grusonii in CANTE, Guanajuato. Right, fruit with longitudinal dehiscence. © J.L

Marcel Kroenlein in Baja-California Photo : © Jean-Marie Solichon.

et al., then Vázquez-Sánchez et al. (2013) confirm the basal position of *Echinocactus grusonii* separated from the rest of ***Echinocactus***, which allows me to think that a monotypic genus can be created and is endorsed with the creation of the new genus ***Kroenleinia*** (J.Lodé 2014): if *Echinocactus grusonii* is not an ***Echinocactus*** nor a ***Ferocactus***, then we must change its name!

Vázquez-Sánchez *et al.* (2013) go even further and suggest that all types included in their clade A [***Ferocactus***, ***Glandulicactus***, ***Leuchtenbergia***, *Stenocactus* (= ***Echinofossulocactus***), *E. grusonii* et ***Thelocactus***] should be considered as ***Ferocactus*** until new evidence is available. *E. grusonii* being in a basal situation, I propose that it be considered a genus of its own: ***Kroenleinia grusonii***, thus avoiding an unfortunate amalgam and especially the problem of priority which would require to reinstall all taxa of these genera in ***Leuchtenbergia***.

The genus ***Kroenleinia*** is considered as **correct** in this work, but it remains further researches to be made.

→ actually only one species:
Kroenleinia grusonii (Hildm.) J.Lodé 2014 (ex *Echinocactus grusonii* Hildm. 1891)

Kroenleinia grusonii, a very old, superb specimen at the Jardin Exotique de Monaco. © J.L

• HABITAT

The genus ***Kroenleinia*** grows among bushes and herbs, on stony soils, rather mineral than organic, usually limestone, also alluvial soils, or on rocky slopes, on the edge of ravines, from 1400 to about 2000 m above sea level, with other cacti. Annual precipitation is usually 500-700 mm, falling between June and September, and winter is punctuated by short frosts. There is a significant disjunction habitat, and at 550 km from plants commonly known but becoming extremely rare in their habitat, it was discovered in 2005, in Zacatecas, a rich population that exclusively grows on volcanic cliffs.

• DISTRIBUTION

Mexico (Guanajuato, Hidalgo, Querétaro, San Luis Potosí, Zacatecas).

Text & photos: JL.

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Kroenleinia grusonii variants, with var. *brevispina*, var. *albispina* and f. *monstruosa*. © J.L

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