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SOME CYTOLOGICAL OBSERVATIONS IN THE LOGANIACEAE

T. W. J. GADELLA

(*Botanical Museum and Herbarium, Utrecht*)

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INTRODUCTION

In a previous paper (GADELLA, 1961) I suggested that the basic chromosome number of the *Loganioideae* might possibly be x = 6. The chromosome number of *Anthocleista djalonensis* Chev. (2n = 60) was in accordance with this supposition. Further investigations in the *Loganiaceae*, however, are highly desirable.

This paper deals with the chromosome numbers of 7 species of *Loganiaceae*. The following data might contribute to a more complete knowledge of the relationships between the genera and species of the *Loganiaceae*.

MATERIALS AND METHODS

The materials, kindly supplied to me by Dr. A. J. M. Leeuwenberg, were obtained in the form of seed samples from different sources as listed below (Not obtained from seeds are *Spigelia splendens* and *Buddleia indica*).

Roottips of the plants were fixed in Karpechenko, embedded in paraffin, sectioned at 15 μ, stained according to Heidenhain's haematoxylin method. The drawings were made with the aid of a "Carl Zeiss-Zeichenaufsatz".

RESULTS

1. **Spigelia anthelmia** L. (2n = 32)
2. **Spigelia splendens** hort. Wendl. ex W. J. Hook. (2n = 26)

The chromosomes of these species are small rods, those of the first 0,7–1,5 μ long, those of the second 0,9–1,6 μ long.

Up to the present, only one species of this genus was examined, *Spigelia marilandica* (L.) L. (2n = 48), by MOORE (1947).

It is very difficult to derive the basic chromosome number from the present data.

As the numbers found are very different, several cytological series may exist.

The chromosome numbers 2n = 32 and 2n = 48 may indicate that for some *Spigelia* species the basic number is x = 16 or x = 8.

In the first case *Spigelia anthelmia* would be diploid and *Spigelia marilandica* triploid, whereas in the second case *Spigelia anthelmia* would be tetraploid and *Spigelia marilandica* hexaploid.

TABLE 1

Species	Chromos. number 2 n	Source	Herbarium material of mother-plant	Herbarium material of seedling	Living material in greenhouse
Spigelia anthelmia L.	32	Surinam, without precise locality. (collected by Relyveld)	—	Gadella, no. 61.301, veg. (U)	Utrecht, Hort. Bot. of the University.
Spigelia splendens hort. Wendl. ex W. J. Hook.	26	Central America, without precise locality.	—	Leeuwenberg, no. 3512, fl. (WAG)	Leiden, Hort. Bot. of the University.
Mostuea hirsuta (T. Anders. ex Benth. et J. D. Hook.) Baill. ex Bak.	20	Bertoua, Cameroun.	Breteler, no. 606 (WAG)	—	Wageningen, Arboretum of the Agricultural Univ.
Strychnos aculeata Solered.	44	Forêt du Banco near Abidjan, Ivory Coast. (collected by H. C. D. de Wit)	—	Leeuwenberg, no. 3509, veg. (WAG)	idem.
Strychnos congolana Gilg.	44	Cameroun. Fruits collected by Breteler, no. 1224 (WAG)	fruits in museum (WAG)	Leeuwenberg, no. 3510, veg. (WAG)	Wageningen, Arboretum of the Agricultural Univ. Baarn, Cantonspark.
Strychnos spinosa Lam.	44	Cameroun.	Breteler, no. 1167 (WAG)	Leeuwenberg, no. 3508, veg. (WAG)	Wageningen, Arboretum of the Agricultural Univ.
Buddleia indica Lam.	76	Madagascar, without precise locality.	—	Leeuwenberg, no. 3511, fl. (WAG)	Leiden, Hort. Bot. of the University[1]). Wageningen Arboretum of the Agric. Univ.

[1]) Grown from cuttings.

3. **Mostuea hirsuta** (T. Anders. ex Benth. et J. D. Hook.) Baill. ex Bak. (2n = 20).

The chromosomes are small rods, 1.1–1.8 μ long. Hitherto no cytological studies were carried out in the genus *Mostuea*. Nothing can be said with certainty about the basic chromosome number of this genus, before more species are examined.

The number 2n = 20 was not found earlier in the family of the *Loganiaceae*

4. **Strychnos aculeata** Solered. (2n = 44)
5. **Strychnos congolana** Gilg. (2n = 44)
6. **Strychnos spinosa** Lam. (2n = 44)

In cytological respect the species show a great resemblance. The chromosomes are very small, 0.7–1.4 μ long. MOHRBUTTER (1936) studied the cytology of the following species: *Strychnos laurina* Wall. ex D.C., *Strychnos sansibariensis* Gilg. and *Strychnos nux-vomica* L.; the chromosome number in all three turned out to be 2n = 24.

Strychnos aculeata Gilg. was studied by S. and G. MANGENOT (1957). As they found the chromosome number 2n = 36, they concluded that this species might be triploid. Intraspecific cytological variation may exist in this species, as I find an other chromosome number than MANGENOT. These data indicate that there is a variation in chromosome number in the very large genus *Strychnos* (ca. 150 species).

Also in Strychnos more intrageneric cytological series may exist, each of which has its own basic chromosome number.

7) **Buddleia indica** Lam. (= *Nicodemia diversifolia* Ten.) 2n = 76.

The chromosomes are small rods, 0.7–1.5 μ long. The chromosome number agrees with that of some *Buddleia* species, which were studied by MOORE in 1947.

As many species of this genus have 38 or 76 chromosomes, the basic number appears to be x = 19.

Buddleia indica, therefore, probably is tetraploid.

CONCLUSION

The data available indicate that x = 6 is not the general basic chromosome number of the subfamily of the *Loganioideae*.

The presence of more than one intrageneric cytological series seems likely in the genera *Spigelia* and *Strychnos*. 2n = 76 was found once more in a species of *Buddleia*, which supports the view of MOORE (1947) that the basic chromosome number of the genus is x = 19. Continued cytological research is highly desirable in order to arrive at more definite conclusions concerning the basic chromosome number(s) of the genera.

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Spigelia anthelmia L.
2n = 32

Spigelia splendens hort. Wendl. ex W.J.Hook.
2n = 26

Strychnos aculeata Solered.
2n = 44

Strychnos spinosa Lam.
2n = 44

Strychnos congolana Gilg.
2n = 44

Buddleia indica Lam.
2n = 76.

Mostuea hirsuta
(T.Anders. ex Benth.et J.D.Hook.) Baill. ex Bak.
2n = 20
13 μ

Fig. 1.

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