PRELIMINARY KARYOTYPE ANALYSIS IN MEMBERS OF *ASTERACEAE* FAMILY

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Abstract: chromosome's number were 2n=18 on *Callistephus chinensis* (China aster) and 2n=36 on *Rudbeckia hirta* (blackeyed susan). Until in *Callistephus chinensis* the chromosomes were found uniforms as dimension and morphology, in *Rudbeckia hirta* there are three morphological types.

INTRODUCTION

The *Asteraceae*, or *Composite* family, is one of the easiest to recognize. The inflorescence of the *Asteraceae* is so distinctive that the family was recognized as a distinct group early on and given a name, *Compositae*, that was so universally recognized that when the structure of family names was first formalized, it was agreed that *Compositae* would continue to be an accepted name. The *Asteraceae* is one of the four largest families, having about 1100 genera and 25,000 species. It occurs throughout the world, but has its greatest diversity in the semi-arid tropics. It is not abundant in tropical rain forests. Most of its members are shrubs or semi-shrubs, but most of our species are herbaceous. Supposed basic chromosome number of family is 9.

Fig. 1 *Callistephus chinensis* (left) and *Rudbekia hirta* (right)

MATERIALS AND METHODS

The investigated species were China aster (*Callistephus chinensis*) and blackeyed susan (*Rudbeckia hirta*).

Germination of the seeds was performed into Petri dishes, on filter paper moistured with distilled water, at 22°C ± 2°C. When roots were reached 5 – 10mm in length, these were treated with 0.2% colchicines for 2 hours, at room temperature. Roots were kept for other two hours in distilled water. Fixation was done for about 16 hours in ethylic alcohol / acetic acid (3:1) mixture, at room temperature. For hydrolysis of vegetal material was used HCl 50% for 10min, at room temperature. The staining was realized with Carr reactive, according literature. The slides were prepared according squash method (1,2,3,4). Microscopy was carrying out using 100x objectives, with a Nikon Eclipse 600 light microscope. Photos were taken with a Nikon CoolPix 950 digital camera, at 1600x1200 dpi resolution. All images were processed with Adobe Photoshop software.

Homologous chromosome groups were settled in accordance with the rapport between long arm and short arm, the mitotic index, the difference between arms and with the relative length of the chromosomes.

RESULTS AND DISCUSSIONS

Callistephus chinensis

Chromosomes number in all analyzed metaphases were found to be 2n=18. From the best metaphase (Fig.2) we settled 9 chromosomes pairs arranged into decrease order of their total length media. The total length media were found from 6.17μm (first chromosome pair) and 3.68μm (last pair). Variability limits were close enough that confirms the authenticity of homologues chromosomes pair's establishment. Centromeric index was between 49.45 (pair IX) and 40.45 (pair VIII). The 18 chromosomes from *Callistephus chinensis* were grouped in one morphological type: M.

Rudbeckia hirta

Chromosomes number in all analyzed metaphases were found to be 2n=36, as in bibliography. From the best metaphase (Fig.3) we settled 18 chromosomes pairs arranged into decrease order of their total length media.

Total length of chromosomes was found between 3.48 μm (pair I) and 1.81 μm (pair XVIII). Relative length of the chromosomes pairs was from 7.45 μm (pair I) to 3.79 μm (pair XVIII). The 36 chromosomes from *Rudbekia hirta* were grouped into two morphological types: M (pairs IX, XIII, XVI, XVII, XVIII), m (pairs I, II, III, IV, V, VI, VII, VIII, XI, XII, XIV, XV) and sm (pair X).

CONCLUSIONS

In the investigated species of *Asteraceae* chromosomes number was found to be 2n=18 in *Callistephus chinensis* and 2n=36 in *Rudbeckia hirta*.

On *Callistephus chinensis* we establish one morphological chromosomes type – M. The karyotype is symmetric and less evolved. In *Rudbekia hirta* we have identified three chromosomes types (M, m and sm) and we consider that this specie has an evolved, asymmetric karyotype (2,4).

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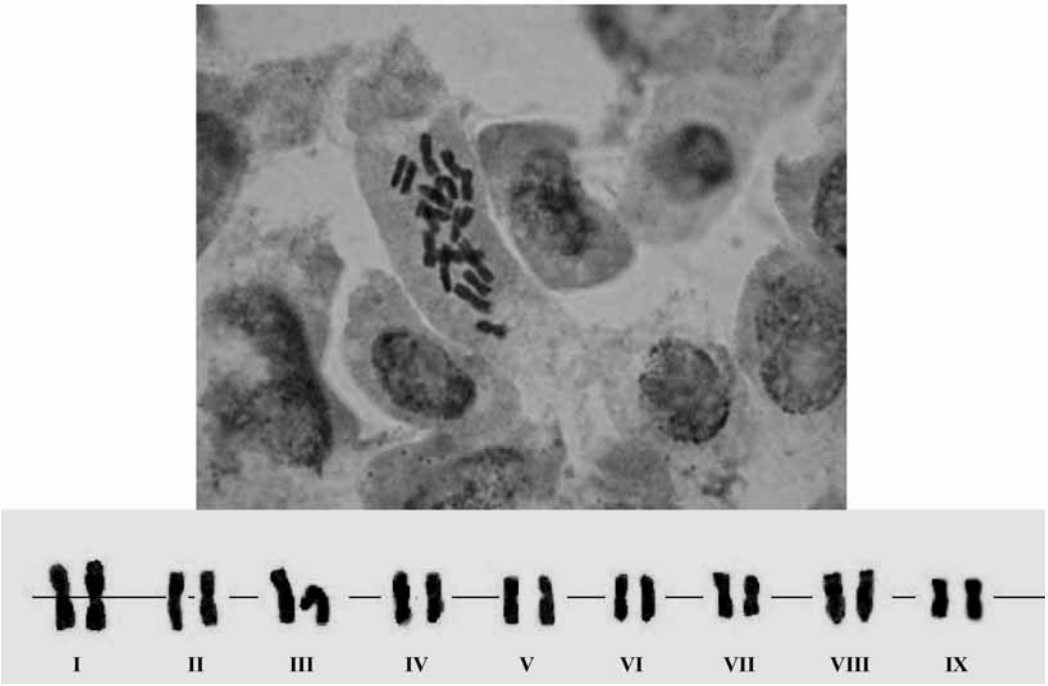

Fig. 2 Metaphase (up) and karyotype (down) in *Callistephus chinensis*

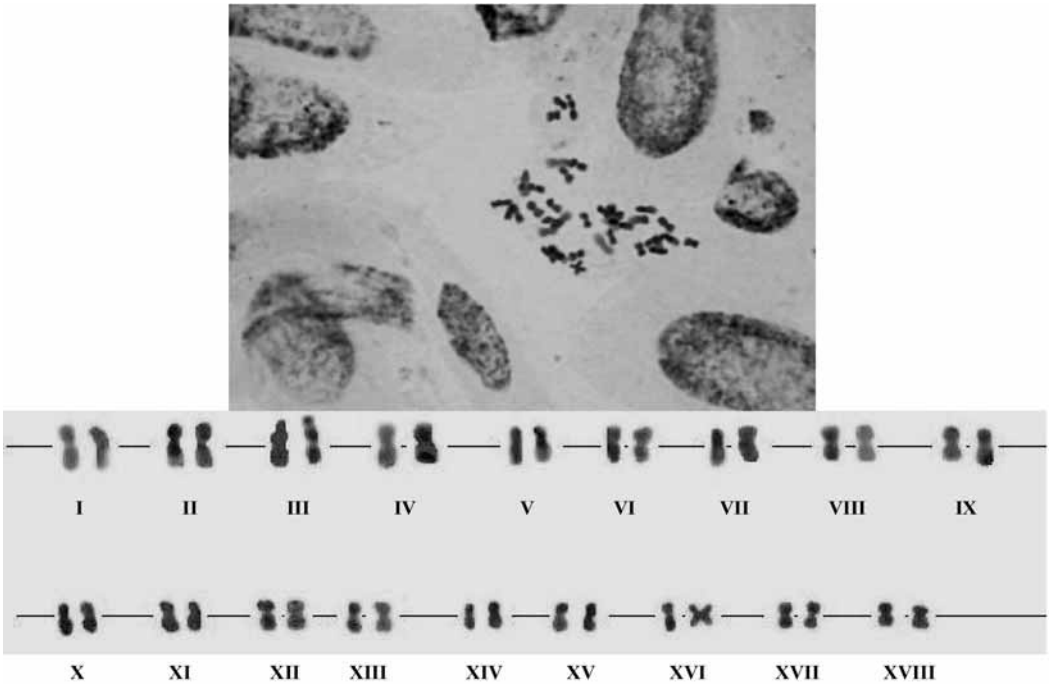

Fig. 3 Metaphase (up) and karyotype (down) in *Rudbekia hirta*