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Short Communication

Centromeric banding pattern of mitotic chromosomes in *Vigna vexillata* (TVnu 73)

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Vigna vexillata **chromosome characterization was carried out using the Leishman C-banding technique. The results showed that the chromosomes mostly exhibited bands at both the centromeric and telomeric regions. These bands will serve, as a valuable marker for the identification of the chromosomes. Chromosomes 2 was the most variable and differed from the other chromosomes by the presence of satellite on the short arm. Diploid chromosome numbers of 22 consisting of 11 pairs of homologues were observed for *V. vexillata*. The homologues chromosomes were arranged in the descending order. The idiogram representing the chromosomes was also constructed.**

Key words: LeishmanC-banding, *Vigna vexillata* and Chromosomes.

INTRODUCTION

Cowpea is an important grain legume crop with high protein content. The major constraint to high productivity and long term storage of cowpea is damage by insect pests. The wild *Vigna* such as *V. vexillata* are known to be sources of genes for resistance. There was incompatibility when crosses were made with the cultivated cowpea, *V. unguiculata* (Adetula, 1999) . Basic information on the cytogenetic of the wild *Vigna* is very useful for the successful transfer of desirable traits into the cultivated cowpea.

MATERIALS AND METHODS

TIPS of actively growing roots of *V. vexillata* were fixed in freshly prepared 0.05% colchicine for an 1 h. The root tips were fixed in 1:3 acetic alcohol for 24 h at 4^{o}C, later rinsed and washed with distilled water for 1 h. Root tips treated with 0.1 N HC1 for 5 min and rinsed twice with distilled water. The root tips were rinsed with cold citrate buffer kept in fridge and washed for 3 min. Then the meristematic portion of the root tips is cut and transferred to enzyme solution and incubated for 30 min at 37^{o} C. After incubation the enzyme solution was replaced with citrate buffer and washed 3 times. The root tip left for 5 min and washed for 5 min. A single root was transferred unto a glass slide and excess water was removed from the surrounding area. A drop of 1:3 acetic alcohol added then the root macerated with fine pointed forceps and the tissue spread on the glass.

The debris is removed and the slides were air dried. The slides placed in 1 N HCL for 5 min at room temperature, rinsed in distilled water, denatured using 4% barium hydroxide solution for 7 min rinsed in distilled water passed through 2X sodium saline solution (SSC) at room temperature for 15 min. They were then transferred to fresh warm 2X SSC and placed in a water bath so that the temperature was raised from 30^{o}C to 52^{o}C. Slides were incubated at 52^{o}C for 70 min. Staining was done with buffer mixed Leishman stain (4:1). Staining intensity was monitored by checking the stained slides after washing in distilled water and air dried overnight.

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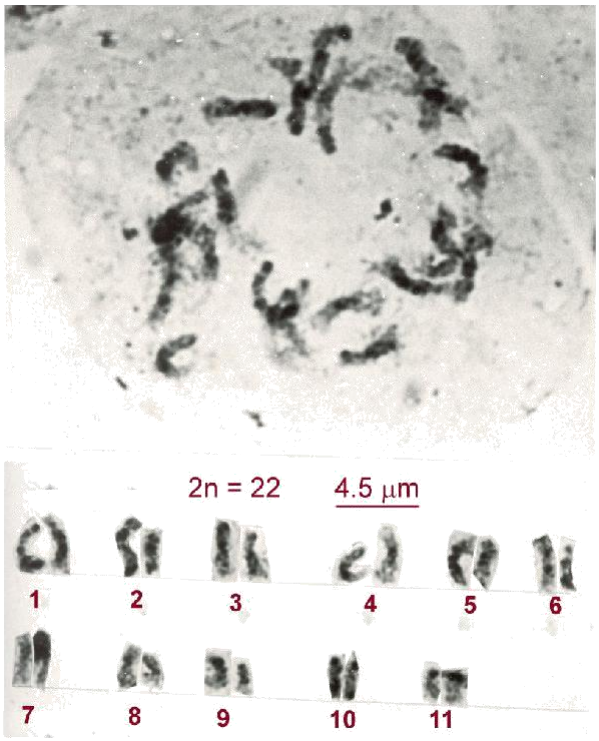

Figure 1. Leishman C-banding of *V.vexillata* (TVNu 73).

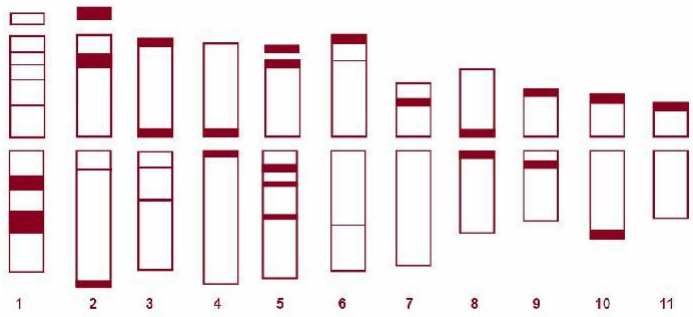

Figure 2. Idiogram of C-Banded chromosomes of *V. vexillata* TVNu 73.

RESULT AND DISCUSSION

11 pairs of homologues chromosomes were identified Figures 1 and 2. The banding pattern of *V. vexillata* (TVNu 73) is as follows:

- Chromosome 1 had a centromeric band, a prominent dark band at the terminal end of the long arm.
- Chromosome 2 had an interstitial band on the short arm. A prominent dark band as seen at the terminal end of the long arm.
- Chromosome 3 had a centromeric band as well as a telomeric band at the short arm of the chromosome.
- Chromosome 4 had a relatively large distinctive centromeric band.
- Chromosome 5 had two centromeric bands.
- Chromosome 6 had a telomeric band on the short arm.
- Chromosome 7 had only a telomeric band on the short arm.
- Chromosome 8 had only a centromeric band.
- Chromosome 9 had a telomeric band on the short arm.
- Chromosome 11 had a telomeric band only on the short arm.

Cytogenenic studies of *Vigna* species is very important because the resistance to insect pests and diseases is often available in wild ancestors and possibility of transfer of such characters depends on the phylogenetic distances among the species (Ladeinde et al., 1980). A high number of suitable metaphase spreads is necessary for karyotype analysis of plant chromosome (Bush et al., 1996; Schondelmaier et al., 1993; Houben et al., 1995). Several authors (Ladeinde et al., 1980; Pignone et al., 1990; Galasso et al., 1992, 1995; Padulosi and Ng, 1997) reported that the somatic chromosomes of *Vigna* were small and uniform making karyotypic studies difficult. In this study it was possible to obtain long, clear and complete 22 chromosomes of *V. vexillata*. It can be concluded that Leishman differential staining of prometaphase chromosome is a useful method for characterizing chromosomes in *Vigna* species.

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