



CYTO-PHENOLOGICAL STUDY OF NATURAL POPULATION OF *BUTEA MONOSPERMA* (LAM.) TAUBERT (PALAS) IN THE CAMPUS OF TROPICAL FOREST RESEARCH INSTITUTE, JABALPUR, M.P.

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ABSTRACT: The cyto-phenological study of the *Butea monosperma* tree, which includes phenology, floral biology, and cytology was carried out in the period between mid- January, 2021 to June 2021. Under the phenological study it was observed that, Palas has consistent flowering patterns in the tropical forest zone, with slight variations. Flowers are papilionaceous, and possess unique arrangement of androecium (9) +1 which is a distinguishing trait of this multifunctional Palas tree. The meiotic process is a key for all sexually reproducing plants because it is responsible for halving the number of chromosomes during gametogenesis and subsequently the recombination process, which provides much of the genetic diversity. Although the genes that drive meiosis are largely conserved, but they are liable to be affected by biotic and abiotic stresses. A spectrum of chromosomal abnormality was screened in natural population of *Butea monosperma* tree in the campus of TFRI, Jabalpur. The overall abnormality percentage was used to calculate the rate of chromosomal aberration (Tab%). A total of five trees were selected, in which the highest anomaly percentage was achieved in the case of *Butea monosperma* plant P4 (4.26±0.22%) and the lowest in the case of plant P2 (1.69±0.16%).

Key words: *Butea monosperma*, cyto-phenology, floral biology, gametogenesis, meiosis, Tab%

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INTRODUCTION

The medicinal legume tree *Butea monosperma* (Lam.) Taubert, often known as "Flame of the Forest" or Palas, is a member of the Fabaceae family. It is found across the larger portion of India, up to 900 meters in the Himalayas, and up to 1,200 meters in peninsular India. It is a multifunctional tree that may be found growing wild in the Indian subcontinent (Mitra 1988). Its therapeutic qualities are documented in ancient Indian texts, and nearly every part of the plant, including the roots, stem, bark, leaves, flowers, fruits, seeds, and gum, is utilized in Ayurvedic and Unani medicines (Mazumder *et al.* 2011). A growing number of researches on the biological activities, pharmacological effects of *Butea* chemicals and extracts, clinical investigations, and potential medicinal uses of *B.*

monosperma have recently been published. Bioactive compounds and extracts isolated from various parts of *B. monosperma* showed potential hepatoprotective, anti-tumorigenic, anti-osteoporotic, thyroid inhibitory, anti-inflammatory, anti-diabetic, anti-fungal, antioxidant, anti-diarrhoeal, dermal wound healing, anti-viral, anti-microbial, anti-convulsive properties (Burli and Khade 2007; Mazumder *et al.* 2011; Pal and Bose 2011). Furthermore, the blooms of *B. monosperma* are cooked in water to extract natural orange or yellow dye, which is environmentally beneficial and used to colour clothing instead of synthetic dye (Burli and Khade 2007). It has also been used by tribals in India for lac growing for a long time. Lac, a natural resin secreted by females of the *Kerria lacca* (Kerr), is economically important produce which