**The first record of basic chromosome numbers of X=11 observed on**

**Holy Thistle (*Cnicus benedictus* L.)**

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Chromosomal studies are among the most important and essential in genetic and breeding evaluations of medicinal plants. Nowadays, cytogenetic science, play an important role in the cell nucleus and its materials studies. *Cnicus benedictus* L. (Blessed Thistle or Holy Thistle), the sole species in the genus *Cnicus*, is a thistle-like plant in the family Asteraceae, native to the Mediterranean region. It is an annual plant growing to 60 cm tall, with leathery, hairy leaves up to 30 cm long and 8 cm broad, with small spines on the margins. The whole plant is astringent, bitter, cholagogue, diaphoretic, diuretic, strongly emetic in large doses, emmenagogue, galactogogue, stimulant, stomachic and tonic. Infusion of the whole plant has also been used as a contraceptive and is often used in the treatment of liver and gall bladder problems.Samples of the plants were collected from natural populations of the rangelands across Fars providence ( between 50,36 and 55,35 E and 27, 03 and 31, 40 N). We applied different treatments to find an appropriate protocol for chromosome counting and karyotypic study in holy thistle. Apical root meristem pretreated in 0.05% colchicine for three hours at 4 °C. After washing, explants were stabilized in alcohol + acetic acid glacial (3:1). 1 M HCl at 60 °C to hydrolyze and soften root tissue. In order to determine the best chromosome staining method, we used 2% Aceto- orcein at room temperature for 19 h. Finally, the samples were crashed by 45% acetic acid. Some chromosome characters, including: Total lengths of chromosomes, long and short arm’s length and arm ratios were determined. Karyotypic symmetry of species was determined by using the total form percentage (TF%), Relative length of the shortest chromosome (S%) and The mean of Chromatin (X) parameters. Chromosomal analysis showed that considering the ploidy level, our samples were diploid and had 2n = 2x = 22 chromosomes. This is the first record of basic chromosome numbers of X=11 observed on *C. benedictus*. Karyotypic formula and karyotypic symmetry showed that the plant was 9m +2sm, allocated to 1A class, which indicating the presence of a primitive symmetrical karyotype in this spice.

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