

Morphological characters, Total phenolic content, and Fatty Acid Compositions of Safflower (*Carthamus tinctorius*) Genetic Resources

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Safflower, a draught and salt tolerant oil seed crop of Compositae family, has been cultivated around the world mainly as source of edible oils and dyes, where India, the USA, Mexico, Australia, and Ethiopia contributing about 85% of the production altogether. In this study we have characterized some selected morphological properties of safflower plant and determined the the total phenolic content (TPC) and fatty acid composition in seeds of 237 genetic resources. All the seed coats were white colored while the petals had red, yellow and white pigments. The yellow was the predominant petal color being recorded in 182 accessions followed by red occurring in 49 accessions. The petal color of 47 of the accessions changed with development while the 190 accession showed no change of color. The leaves are ovate to obovate, mostly with dentate (21 moderate and 205 weak) and few smooth (11) margins. The plant length, leaf length, and leaf width were ranged between 65.7 and 160.8 cm, 14.3 and 37.0 cm, and 3.3 and 12.1 cm, respectively. The TPC was determined using Folin-Ciocalteu method and fatty acid compositions were evaluated using gas chromatography. The TPC content ranged from 23.71 to 132.72 µgGAE/mg dried extract (DE). The seeds of safflower genetic resources accounted an average crude fat content of 26.25% (14.84 to 41.70%). The total fatty acid is mainly comprised of 71.72% linoleic acid (18:2) and 20.08% oleic acid (18:1) on average, the remaining palmitic acid (16:0), stearic acid (18:0) and linolenic acid (18:3) contributing 5.84, 2.23 and 0.15 %, respectively. The fatty acid composition of safflower seeds has shown great variability, where oleic and linoleic acid have a wide range of variation, from 9.23 to 83.35% and from 10.46 to 82.62%, respectively.

Key words: Safflower, Morphological Characters, Total phenolic content, Linoleic acid, oleic acid

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