ABSTRACT

Helianthus or sunflower is a genus of plants comprising about 70 species. Except for three species in South America, all Helianthus species are native to North America. The common sunflower and other member of Helianthae, notably Jerusalem artichoke (*H. tuberosus*), are cultivated in temperate regions and some tropical regions as food crops for humans, cattle, and poultry, and as ornamental plants.

The common sunflower is valuable from an economic and ornamental point of view. The leaves are used as fodder, the flowers peduncles yield yellow pigment for dye, and the seeds contain edible oil. The sweet yellow oil obtained by compression of the seeds is considered equal to olive or almond oil in aspect of quality. Sunflower oil cake is used for stock and poultry feeding. The oil is also used in soap and paints and as a lubricant. The seeds may be eaten dried, roasted, or ground into nut butter and are common in birdseed mixes.

There are many cultivars of sunflower including teddy bear, skyscraper, and lemon queen. Variation among these cultivars can be studied using molecular techniques and the result can be used to develop the phenetic relationship among them. Random Amplified Polymorphic DNA (RAPD) is one of molecular techniques that can be used for this purpose. The purpose of this research to analyze the phenetic relationship relationships of three types of sunflower plants based on RAPD markers. RAPD is a PCR base technique which amplify DNA fragments with random primers. Sunflower's DNA was isolated from young leaves and confirmed by electrophoresis. The obtained genomic DNA was then be used as template in PCR process. The RAPD profiles were analysed using UPGMA method employing MEGA 7. The analysis reveals that Lemon Queen and Skyscraper has the closest phenetic relationship, while Skyscraper and Common sunflower are the most distant related.

Keywords: sunflower, genetic diversity, primer, RAPD, phenetic relationship