



## The Effects of Gamma Radiation on Crude Oil Yield and Germination of Sunflower-Tanay Variety (*Helianthus Annuus L.*) Seeds

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This study was conducted to investigate the effects of gamma rays on crude oil yield, seedling growth, germination and antimicrobial activity of sunflower (*Helianthus annuus*). As plant materials, sunflower variety Tanay seeds were used and irradiated with doses of 0 (control), 100, 200, 300, 400 and 500 Gy gamma radiation. Irradiation was performed in a cesium ( $Ce^{137}$ ) Gammacell 3000 Elan source, dose rate about 9.75 Gy/min (2900 Ci) in the Pamukkale University Faculty of Medicine in the department of the radiological.

To determine seed viability, tetrazolium chloride (TTC) test was performed. Moisture amount of seeds were also measured by AOCS standarts and seeds were subjected to germination tests. The seeds were treated with 100 ppm doses of  $GA_3$  for 24 hours (GA), soaking for 24 hours (SB), preheating for 24 hours in a week (PH) and precooling for 24 hours in a week (PC) for optimization of germination.

The result showed that the highest crude oil yield was also obtained from 400 Gy. As a result of testing of seed viability, 95% viability in seeds was determined. In 12L/12D light photoperiod, 25% germination in seeds was detected at GA application the highest, the lowest 5% germination in seeds was determined in PC application. It was found that minimum and maximum values ranged between 5.72and 10.81% for humidity rate.

Extraction of the seed of Sunflower-Tanay was done with soxhlet apparatus using petroleum ether by hot continuous extraction for 6 hours. Antimicrobial activity of Sunflower-Tanay extract were tested by a disk diffusion method. Extracts of the *H.annuus L.*(sunflower)-Tanay showed no antimicrobial activity against *M.luteus* NCIMB 13267 and *E. coli* ATCC 25922.

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