Enhancement rutin production from *Capparis spinosa* plant by UV-C or Gamma irradiation using *In vitro* culture

In the framework of climate changing adaptation and mitigation efforts, biotechnology can positively contribute to lowering the likelihood of environmental systems being affected by climate change's consequences. Caper bush is notoriously difficult to grow through traditional techniques, although despite the substantial social-economic and medical value of this species, its micropropagation has received very little study thus far. Therefore, in our study the internode segments were collected from the Southern of Sinai, and disinfected with various treatments of disinfectant agents and exposure times. Then the successive clean shootlets formed in the sterilization stage were separated and cultured on MS medium at various strengths of salts (Full, ¾, ½ and ¼ strength). The established micronodes were cut into small pieces, and re-cultured on MS medium supplemented with BAP or Kin each at 0.0, 1.0, 2.0 and 3.0 mg/l. The growing shootlets were removed individually and cultured on rooting MS medium supplemented with 0.0, 1.0, 2.0, 3.0 and 4.0 mg/l IBA or IAA for each, and finally the rooted explants were acclimatization in green house. UV-C rays exposure times (2, 4 and 6 hrs) or gamma radiation wave doses (0.5, 1.0 and 1.5 Gy) were applied. The successive rooted explants cultured on MS media containing IAA 4.0 mg/l (scored 41.66 % roots) were transferred on peat moss: vermiculite 2:1 which scored 41.66 % acclimatized plantlets. Also, gamma radiation at 1.0 Gy increased flavonoid and rutin content to 12.34 and 3.25 mg/g DW compared to 7.21 and 0.06 mg/g DW for control plants, respectively.