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In vitro induced mutagenesis in the calli derived from Black-gold Snake plant; *Sansevieria trifasciata* var. *Laurentii compacta*

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Sansevieria trifasciata is widely used as an ornamental due to diverse color combinations and variegation patterns. To cope up with the growing demand, it is commercially important to develop promising varieties with novel phenotypes. Therefore, current study was conducted to develop a mutagenesis protocol using selected mutagens and to study the effect of mutagens. Moreover, the combination of Plant Growth Regulators on the shoot and root regeneration of *Sansevieria trifasciata* var. *Laurentii compacta* was optimized. Three months old calli grown in MS+0.4 mg/l 2,4-D were exposed to selected physical and chemical mutagens; UV radiation for different time intervals (60, 120,180, 240, 300, 360, 480s), gamma radiation for different doses (17, 20, 25, 30, 35, 40, 45, 50Gy) and Ethyl Methanesulfonate (EMS) for different concentrations (0.2%, 0.4%, 0.6%, 0.8%, 1.0%, 1.5% v/v). Afterward, calli were cultured in MS media supplemented with different PGR combinations for shoot and root generation. For data analysis, both Kruskal Wallis and Dunn's tests were carried out by using a statistical software R 3.6.3. The highest shoot regeneration (56.25%) was observed from UV treatment of 300s. With the increase of gamma dose from 17Gy to 50Gy, regeneration percentage gradually declined from 67.71% to 0%. Also, EMS of 0.8% v/v showed the highest shoot regeneration (66.47%). The media of MS+2.0 mg/l BAP+1.0 mg/l NAA+2.0 mg/l Kinetin and MS+3.00 mg/l IAA showed the maximum response in shoots regeneration (70.36%) and root induction (2.17±0.27) respectively. Moreover, further field trials and screening techniques are necessary for developing novel phenotypic variants.

Keywords: Mutagenesis, UV radiation, Gamma radiation, EMS, Plant growth regulators

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