Novel and Effective Tridax procumbens Extract for Protection against Yellow Mosaic Virus in Abelmoschus esculentus (Okra)

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Yellow mosaic virus disease causes 50%-94% losses annually in Abelmoschus esculentus crop. It causes stunted growth, shrinkage of leaves, discoloration and yield loss. In India, this is an annual feature and crop management techniques such as hybrid seeds, pesticides, mutations have failed. Using Tridax procumbens extract, I tested the hypothesis that this extract will inhibit the virus and enhance yield. Abelmoschus esculentus (Okra) seeds were sown in 42 sq.m area. Tridax procumbens extract was made by crushing the entire plant. The extract was diluted in water in 12.5%, 20%, 40%, and 60 % concentrations and sprayed on 40 Okra plants (10 plants per concentration) fortnightly. 10 plants were control plants. Plant height, leaf laminar area, number of fruits, leaf and fruit color of Okra plants was recorded every 15 days. Data were analyzed using ANOVA and Post Hoc Tukey test. Secondary metabolites' analysis of extract done using Thin Layered Chromatography showed the presence of phenols, terpenoids, saponins, and flavonoids. Compared to control plants (mean height 26.8 cm) 20% concentration spray squirted highest plant height (mean height =45.8 cm). Similar results were obtained for laminar leaf area for control plants (mean=215.8 sq.cm) 20% concentration (mean=332.80 sq.cm); Number of fruit for control plants (mean=11.4) 20% concentration (mean=21.3). Control plants showed discoloration whereas experimental plants were dark green. This study showed that Tridax procumbens extract inhibited Yellow Mosaic Virus and improved yield of Okra by 87%. It is zero cost and safe as it is a wild plant with antioxidant, antibiotic, immunomodulatory properties.

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