SHORT COMMUNICATION

Utilization of vegetable extracts for biostimulation and enhancement of medicinal properties in *Aloe vera* cultivation

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ABSTRACT

The rising demand for natural and sustainable agricultural inputs has spurred interest in plant-based biostimulants to boost crop productivity and phytochemical quality. Aloe vera (Aloe barbadensis Miller), valued for its medicinal and commercial applications, owes its utility to bioactive compounds like polysaccharides, phenolics, and antioxidants. This study investigates the effect of aqueous and hydroalcoholic extracts from spinach (Spinacia oleracea), carrot (Daucus carota), and beetroot (Beta vulgaris) on the growth and phytochemical profile of Aloe vera. Over an 8-week greenhouse trial, plants received foliar and soil applications of these extracts. Treated plants showed significant gains in vegetative growth, chlorophyll levels, and leaf biomass versus controls. Biochemical analysis revealed increased phenolic content, flavonoids, and antioxidant activity, especially in beetroot- and carrot-treated groups. Notably, carrot extracts also led to higher polysaccharide yields, enhancing Aloe vera's therapeutic value. These findings suggest vegetable extracts act as natural elicitors, promoting secondary metabolite biosynthesis. As low-cost, eco-friendly biostimulants, they hold promise for improving the vitality and commercial quality of medicinal plants.

Keywords: Antioxidant activity, foliar application, polysaccharides, secondary metabolites, sustainable agriculture