

Abstract

Saga plants (*Abrus precatorius*) are known for their bioactive compounds, particularly phenolics, flavonoids, and saponins, which contribute to their antioxidant properties. Enhancing these compounds through elicitor treatments has gained significant interest in plant biotechnology. Among various elicitors, methyl jasmonate is well-studied for its role in inducing secondary metabolite production. However, the optimal concentrations and organ-specific effects of methyl jasmonate on *A. precatorius* remain underexplored. This study investigates the total phenolic, flavonoid, and antioxidant activity of crude extracts from saga plants treated with different concentrations of methyl jasmonate and ethanol, aiming to enhance their bioactive compound yield. Plants were treated via foliar spray using distilled water (control), 40% ethanol, and methyl jasmonate at concentrations of 0.25, 0.5, and 1 mM. In roots, phenolic content reached 47.84 mg GAE/g and flavonoid content reached 29.72 mg QE/g at 1 mM methyl jasmonate. In leaves, flavonoids peaked at 72.74 mg QE/g at 0.5 mM, while phenolics reached 85.69 mg GAE/g with ethanol. Antioxidant activity (DPPH assay) in leaves was highest at 1 mM methyl jasmonate with 64.73% inhibition, significantly exceeding other groups. Saponin levels increased with methyl jasmonate treatment but showed no significant differences. These findings indicate that methyl jasmonate acts as an effective elicitor for enhancing specific phytochemicals and antioxidant activity in *A. precatorius*, with concentration- and tissue-dependent effects. The study supports the potential of methyl jasmonate for improving the phytochemical value of *A. precatorius* in pharmaceutical and nutraceutical applications.

Keywords: *Abrus precatorius*, antioxidant activity, elicitor, flavonoids, methyl jasmonate, phenolics, saponins