

**ABIOTIC STRESSORS ENHANCE THE ANTIOXIDANT ACTIVITY
AND TOTAL PHENOLIC CONTENT IN THE LEAVES OF *SONCHUS
OLERACEUS* L. ('GAL POTHUKOLA')**

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Leaves of *Sonchus oleraceus* L., a traditional component of the Māori diet in New Zealand, are rich in phenolic compounds and show potent extractable antioxidant activities. Extractable antioxidant activities show considerable variation among plants, which may be due to variation in their growing environments and/or genotype, but the precise reasons for this variation are unknown.

To study whether stressors augment the antioxidant activities, the DPPH (2,2-diphenyl-1-picrylhydrazyl radical) scavenging capacities and concentration of phenolic compounds were measured by the Folin-Ciocalteu method and expressed as mg tannic acid equivalent g⁻¹ of dry plant weight (mg TAE g⁻¹) for methanolic extracts of leaves following exposure of the *S. oleraceus* plants to drought (withhold water for 7 d and re-water), chilling (repeatedly held at 5 °C for 12 h overnight and returned to the glasshouse during the day), salinity (irrigating with 50 mM NaCl, 150 mL day⁻¹), low light (7±1 μmol m⁻² s⁻¹) and control (continuously in glasshouse irrigated with 150 mL water day⁻¹).

Chilling and salinity doubled the antioxidant activities and concentrations of phenolic compounds compared to DPPH scavenging 1/EC₅₀ 8±1 (g L⁻¹)⁻¹ and total phenolics 228±30 mg TAE g⁻¹ of the control. Drought stressor increased the concentration of phenolic compounds (282±60 mg TAE g⁻¹) but not antioxidant activities [8±1 (g L⁻¹)⁻¹]. Low light considerably diminished the accumulation of phenolic compounds and antioxidant activities control (DPPH scavenging 1/EC₅₀ 3±0 (g L⁻¹)⁻¹, 101±16 mg TAE g⁻¹) compared to the control. In conclusion, application chilling and salinity stressors to plants enhanced the antioxidant activities of *S. oleraceus* leaves, which may improve its value further as a valuable dietary antioxidant source for humans.

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