

## Abstract

An experiment was conducted to determine the association of tea catechins to water stress in tea, with the objective of determining their suitability as indicators for predicting drought tolerance in tea (*Camellia sinensis*). The study consisted of six tea clones (BBK 35, TRFK 6/8, TRFK 76/1, TRFK 395/2, TRFK 31/30, and TRFK 311/287) and four levels of soil water content (38, 30, 22, and 14% v/v), which were arranged in a complete randomized design and replicated 3 times. The treatments were maintained for a period of 12 weeks. Tea shoots were sampled for catechin analysis during the 6th week of water treatment, in which fresh shoots with two leaves and a bud were plucked and steamed for 2 min, and dried at 70 °C to constant weight. Subsequently, the samples were ground and analyzed for catechins using an HPLC system. The total catechins showed significant correlation with shoot growth ( $r=0.65$ ,  $P=0.006$ ), soil water content ( $r=0.54$ ,  $P=0.0066$ ), and water stress index ( $r=0.67$ ,  $P=0.0004$ ). The epicatechin (EC) correlated with shoot growth ( $r=0.58$ ,  $P=0.0032$ ), soil water content ( $r=0.62$ ,  $P=0.0014$ ), and water stress index ( $r=0.63$ ,  $P=0.0010$ ). Similarly, epigallocatechin (EGC) correlated with shoot growth ( $r=0.65$ ,  $P=0.0006$ ), soil water content ( $r=0.50$ ,  $P=0.0133$ ), and water stress index ( $r=0.60$ ,  $P=0.0021$ ). However, epigallocatechin gallate (EGCg) and epicatechin gallate (ECG) showed no significant response to changes in soil water content. The shoot contents of EC and EGC in the six clones showed varied responses, with a distinct pattern in the water-stress tolerant clones (TRFK 6/8 and TRFK 31/30). The results suggest a potential use for EC and EGC as indicators in predicting drought tolerance in tea.