

very few studies have been conducted to understand the antioxidant, antimicrobial, and cytotoxicity effects of *A. tinctoria* L. leaves and root extracts [31,32]. The present study aimed to unveil and validate their *in vitro* antimicrobial and antioxidant activities of *A. tinctoria* L. or Ratanjot roots in a meat-model system for potential food industry application.