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## Dissipation, transfer and safety evaluation of emamectin benzoate in tea

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**Abstract:** The dissipation and residue of emamectin benzoate in tea leaves and the residue transfer from tea leaves to tea brew were investigated by modified QuEChERS (quick, easy, cheap, effective, rugged and safe) combined with ultra performance liquid chromatography tandem mass (UPLC-MS/MS). The average recoveries ranged 85.3%-101.3% with relative standard deviation (RSD) less than 15%. The limits of quantification (LOQ) were 0.005 mg kg<sup>-1</sup> in tea leaves and 0.0004 mg L<sup>-1</sup> in brew. Emamectin benzoate dissipated rapidly in tea with half-life ( $t_{1/2}$ ) of 1.0-1.3 days. The terminal residues of emamectin benzoate were less than 0.062 mg kg<sup>-1</sup>. The leaching rate of emamectin benzoate from freshly-made tea to brew was <5 %. The risk of emamectin benzoate at the recommended dosage was negligible to humans depending on risk quotient (RQ) value, that was lower than 1 significantly. This study could provide guidance for the safe use of emamectin benzoate and serve as a reference for the establishment of maximum residue limits (MRLs) in China.

**Key words:** Emamectin benzoate, Tea, Dissipation, Transfer, Ultra performance liquid

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