

Title Genetic variation associated with glucosinolate hydrolysis and postharvest performance in rocket (*Arugula*) species

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Abstract

Rocket (*Arugula*) is a cruciferous crop used extensively in baby leaf salads. Its peppery taste is indicative of high glucosinolate content. Hydrolysis of glucosinolates by the enzyme myrosinase results in the formation of epithionitriles or isothiocyanates, and in *Arabidopsis* the specificity of this conversion is conferred by the locus ESM1. Both isothiocyanates and epithionitriles are produced by cruciferous plants as a defence against herbivores, but isothiocyanates are of interest in human nutrition for their anticancer properties, therefore identification of ESM1 orthologues in edible crucifers is of potential value to breeding programmes in these species.

Several cultivars are grown commercially from wild rocket (*Diplotaxis*) and salad rocket (*Eruca*) species and these have varying properties of shelf life and taste. The postharvest longevity of a number of cultivars was compared by visual inspection and determination of membrane leakage by conductivity measurements following different preharvest growing conditions. Homologues of ESM1 were obtained from rocket cultivars and comparisons made of the genomic sequence. Expression during shelf life was also quantified and the implications of these findings will be discussed.