

METABOLIC PROFILING OF RED RASPBERRY (*RUBUS IDAEUS*) DURING FRUIT DEVELOPMENT AND RIPENING

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ABSTRACT

Red raspberry (*Rubus idaeus*) fruit quality at different harvest stages is a function of the fruit's metabolite content, which results from physiological changes during fruit growth and ripening. In order to investigate raspberry fruit development, targeted GC-MS metabolic profiling analysis was conducted. Principal component analysis (PCA) was employed to explore the polar metabolite profiles and represent a strong separation between fruit samples at four developmental stages.

Each stage of fruit development had a characteristic metabolic profile. Significant changes in metabolite levels were found in fruits turning red in comparison with fruits over-ripening. The levels of free amino acids decreased gradually before the red ripening stage, but increased in the over-ripening stage. In addition, fruit development is characterized by rapidly increasing sugar levels and decreasing organic acids.

KEYWORDS: Metabolic Profiling, Raspberry, Fruit Development, GC-MS