



Molecular characterization of a variegated grapevine mutant cv Bruce's Sport

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Abstract (250 words)

Variegation, a frequently observed trait in plants, is characterized by the occurrence of white or discoloured plant tissue. This phenomenon is attributed to genetic mosaicism or chimerism, potentially impacting the epidermal (L1) and subepidermal (L2) cell layers. In grapevine, variegation manifests as white or paler leaf, flower, or berry tissues, often leading to stunted growth and impeded development. Despite its prevalence, variegation in grapevines remains understudied. Notably, a natural mutant derived from Sultana, namely Bruce's Sport, exhibits colour variegation in the leaves, although this occurrence only appears later in the growing season. Conversely, the flowers and berries are always variegated and are paler in colour. Furthermore, studies have observed that Bruce's Sport displays a lower berry yield compared to the Sultana variety, along with reduced polyphenol oxidase (PPO) activity in the variegated tissues. This study aims to investigate the genetic basis of variegation in Bruce's Sport and its effects on plant growth and development. To this extent, a transcriptomic analysis was employed comparing data obtained from flower tissue of Sultana and Bruce's Sport. Additionally, differentially expressed genes were confirmed, aiding in the identification and characterization of genes associated with variegation in the *Vitis* genome, potentially uncovering candidates for future functional studies.

Keywords: variegation, grapevine, polyphenol oxidase activity, gene expression.