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Abstract

Indolamine Contents in New Zealand's Grown Cherries †

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Abstract: Monoamine neurotransmitters such as indolamines including melatonin (5-methoxytryptamine) and serotonin (5hydroxytryptamine) were first identified in mammals and now have been ubiquitously found in plants. Melatonin, known as the sleep hormone, is synthesised in the pineal gland of humans, and can be obtained from some foods. Melatonin can modulate energy, circadian rhythms, and has antioxidant effects. Melatonin is biosynthesized from tryptophan. The potential effects of melatonin and tryptophan on human health and their functions in plants are well known. However, there are scarce data on indolamine content in NZ cherries and other common fruits. NZ's export quality cherries are produced in central Otago because of mineral-rich soil and an ideal climate. We hypothesise that, because of a unique growing environment (UV index, volcanic soil, etc.), there will be elevated levels of melatonin and tryptophan in NZ-grown cherries. The primary objective was to develop an extraction and analytical method for the detection and quantification of indamines for NZ cherries using HPLC–fluorescence. In this study, we detected and quantified, for the first time, the levels of melatonin and its precursors, serotonin, tryptophan, and tryptamine, in five varieties of NZ-grown cherries. The highest melatonin levels were found in lapin variety cherry (130 ± 0.003 ng/g of dry weight), and the highest tryptophan levels were detected in lapin cherry (721 ± 18.0 µg/g of dry weight). No serotonin and tryptamine contents were found in the analysed varieties of cherry.

Keywords: melatonin; tryptophan; HPLC method development

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