

Characterization and functional properties of new everbearing strawberry (*Fragaria x ananasa* Duch.) cultivar, ‘Summertiera’ berries

Takeshi Nagai^{1,2,3*}, Misuzu Tamai⁴, Masato Sato⁵, Yasuhiro Tanoue⁶, Norihisa Kai⁶, and Nobutaka Suzuki⁷

¹Graduate School of Agricultural Sciences, Yamagata University, Yamagata 9978555, Japan;

²The United Graduate School of Agricultural Sciences, Iwate University, Iwate 0208550, Japan;

³Graduate School, Prince of Songkla University, Songkhla 90112, Thailand; ⁴Yamagata University, Yamagata 9978555, Japan; ⁵The Farm Village Industry Federation of JA Kushibiki Agricultural Cooperatives, Yamagata 9970341, Japan; ⁶National Fisheries University, Yamaguchi 7596595, Japan; ⁷Nagoya Research Institute, Aichi 4701131, Japan

Corresponding author: *Takeshi Nagai, PhD, Professor, Graduate School of Agricultural Sciences, Yamagata University, Yamagata 9978555, Japan

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ABSTRACT

Background: In recent years, a new everbearing strawberry cultivar, ‘Summertiera’ was cultivated to supply the strawberries in pre-harvest season from July to October in Japan. For highly research and development of processing of this cultivar, ‘Summertiera’ berries, the objective of this study was to characterize these berries, with relation to chemical parameters, total phenols, total flavonoids, total vitamin C, and total anthocyanins, and was to investigate the solubility and the stability of anthocyanins from the berries. Moreover, the functional properties such as antioxidative activity, active oxygen species scavenging activity, and antihypertensive activity were also evaluated.

Methods: Chemical analysis, colour measurement, and sensory evaluation of new everbearing strawberry cultivar, ‘Summertiera’ berries were performed. Next, the solubility of anthocyanins from the berries and stability of these against pH, temperature, and an incandescent lighting were investigated. Moreover, functional properties of the extracts prepared from berries were elucidated using 5 different methods.

Results: The contents of water, proteins, lipids, carbohydrates, and ash were the same as those of other cultivar berries. The sugar-acid ratio in the berries was low; these were acidulous. By sensory evaluation, the main factors were vivid red colour, aroma, and acidity. The berries were rich in phenols, flavonoids, vitamin C, and anthocyanins. The anthocyanins of the berries

became unstable by heat treatment and light exposures such as visible rays. On the other hand, the extracts prepared from the berries showed the functionalities such as antioxidant activity, active oxygen species scavenging activities, and antihypertensive activity.

Conclusions: The strawberry cultivar, 'Summertiera' berries were the most suitable for processing ingredient of strawberry-derived products with superior health promoting functionalities.

Keywords: Summertiera, everbearing strawberry cultivar, characterization, sensory evaluation, color and storage, functional property