proceedings

MDPI

Abstract

The Inside and out of Folate in Strawberries and Avocados †

Michael E. Netzel [1,*], Caroline Dumler [2], Nadine Weber [2], Lisa Striegel [2], Michael Rychlik [1,2], Hung T. Hong [1] and Tim O'Hare [1]

[1] Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, Coopers Plains, QLD 4108, Australia; michael.rychlik@tum.de (M.R.); h.trieu@uq.edu.au (H.T.H.); t.ohare@uq.edu.au (T.O'H.)

[2] Research Department Nutrition and Food Sciences, Technical University Munich (TUM), 85354 Freising, Germany; c-dumler@gmx.de (C.D.); nadine1.weber@tum.de (N.W.); lisa.striegel@tum.de (L.S.)

* Correspondence: m.netzel@uq.edu.au

† Presented at the third International Tropical Agriculture Conference (TROPAG 2019), Brisbane, Australia, 11–13 November 2019.

Published: 2 February 2020

Abstract: Folate, an important B-group vitamin, is considered a critical vitamin in many countries, with folate deficiency being associated with neural tube defects in newborns. Strawberries and avocados are considered a healthy, tasty snack by many consumers, and may potentially be an important dietary source of natural folates, depending on variety and growing environment. A selection of Australian-grown strawberry varieties and breeding lines, as well as commercial avocado cultivars, were screened for their folate content and vitamer profile by stable isotope dilution assay. Total folate content ranged from 69–170 µg/100 g fresh weight (fw) for strawberries and 76–196 µg/100 g fw for avocados, which was well above the values in the Australian Food Composition Database (39 µg/100 g fw for strawberries and 90 µg/100 g fw for avocados, respectively). Furthermore, folate concentration in the outer strawberry tissue was found to be 1.7-fold higher than the inner tissue of the fruit, whereas the inner avocado tissue had 1.4-fold higher folate than the outer green edible tissue. 5-Methyltetrahydrofolate, the biologically active form in humans, was the principal vitamer present. With these high folate concentrations, a punnet (250 g) of Australian-grown strawberries or 200 g of Australian-grown avocados would deliver the FSANZ recommended dietary intake (RDI) for folate (400 µg dietary folate equivalents/day/adult). Furthermore, the differences between outer and inner tissue could indicate that flatter, longer strawberries may have greater potential to accumulate folate than fruit with a more spherical shape, whereas more folate could be accumulated in a rounder-shaped avocado.

Keywords: folate; strawberries; avocados

Funding: This research was funded by Hort Innovation project "Naturally Nutritious" (HN15001).

Acknowledgments: Jodi Neal, Department of Agriculture and Fisheries, Queensland Government, for supplying strawberries.

Conflicts of Interest: The authors declare no conflict of interest.