

Abstract

The Effect of Zespri® Sungold Kiwifruit and Skin on Immune Function and Gastrointestinal Health [†]

Sarah Eady ^{1,*}, Alison Wallace ¹, Chrissie Butts ², Duncan Hedderley ² and Kerry Bentley Hewitt ²

¹ Plant & Food Research, Gerald Street, Lincoln 7608, New Zealand; alison.wallace@plantandfood.co.nz

² Plant & Food Research, Bachelor Road, Palmerston North 4410, New Zealand; chrissie.butts@plantandfood.co.nz (C.B.); duncan.hedderley@plantandfood.co.nz (D.H.); Kerry.bentley-hewitt@plantandfood.co.nz (K.B.H.)

* Correspondence: sarah.eady@plantandfood.co.nz; Tel.: +64-3325-9671

[†] Presented at the 2019 Annual Meeting of the Nutrition Society of New Zealand, Napier, New Zealand, 28–29 November 2019.

Published: 13 December 2019

This study investigated whether daily consumption of three gold-fleshed kiwifruit with and without the skin could alleviate constipation, improve gastrointestinal discomfort and influence immune markers in individuals with IBS. Thirty-eight participants (19 healthy and 19 with IBS-C) completed a 16-week randomised, cross-over study. They were asked to consume either three kiwifruit without the skin or three kiwifruit including the skin for 4 weeks each, with a 4-week washout between each treatment. A 2-week washout period was included at the beginning and end of the study. Daily bowel habit diaries were kept throughout the study. Gastrointestinal symptoms were rated weekly and plasma samples were collected for inflammatory marker measurement (C-reactive protein, TNF- α , IL-6 and IL-10) at the beginning and end of each intervention period. The primary outcome measure was differences in the concentration of pro-inflammatory cytokines. Secondary outcome measures were bowel movement frequency and improved gastrointestinal comfort. TNF- α was significantly decreased in the healthy and IBS-C participants when consuming kiwifruit & skin and in the healthy group consuming kiwifruit flesh ($p < 0.001$). In the IBS-C group, IL-10 was significantly reduced with kiwifruit flesh when compared to the healthy group ($p = 0.003$). There were no significant effects of intervention, group (healthy, IBS-C) or intervention on C-reactive protein. The total number of bowel motions and the number of complete spontaneous bowel motions (CBSM) per week significantly increased when consuming the kiwifruit flesh and kiwifruit flesh & skin ($p < 0.001$). Complete bowel motions (CBM) and spontaneous bowel motion (SBM) per week were also significantly increased ($p < 0.001$). Stool consistency was improved, with kiwifruit consumption resulting in softer stools ($p < 0.05$). This trial has provided evidence to support that eating both the skin & flesh of SunGold Kiwifruit has beneficial effects on gastrointestinal health for both healthy and IBS-C consumers.



© 2019 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).