

The effect of food, vitamin or mineral supplements on chronic constipation in adults: a systematic review and meta-analysis of randomised controlled trials

A. van der Schoot¹, A. Creedon¹, K. Whelan¹ and E. Dimidi¹

¹Department of Nutritional Sciences, King's College London, London, UK

Chronic constipation is a prevalent gastrointestinal disorder that is challenging to treat. Over-the-counter (OTC) supplements are commonly used in its management, however it remains unclear which are most efficacious⁽¹⁾. The aim was to investigate the effect of food, vitamin or mineral supplements on stool output, gut transit time, gastrointestinal symptoms and quality of life in adults with chronic constipation via a systematic review and meta-analysis of randomised controlled trials (RCTs).

Eligible studies were identified using electronic databases, backward citation and hand-searching abstracts. RCTs reporting administration of food, vitamin or mineral supplements in adults with chronic constipation were included. Risk of bias (RoB) was assessed with the Cochrane RoB 2.0 tool. Results were synthesised using risk ratios (RR), mean differences (MD) or standardised mean differences (SMD) and 95% confidence intervals (CI) using a random-effects model.

Eight RCTs (n = 787) were included, investigating kiwifruit (3 RCTs), senna (2 RCTs), magnesium oxide (2 RCTs), Ziziphus jujuba (1 RCT) and Malva Sylvestris flower (1 RCT) supplements. No RCTs on vitamin supplements were identified.

Kiwifruit supplements did not impact stool frequency (MD 0.2 bowel movements/week, 95% CI -0.3, 0.8, p = 0.40; I²=26%, p = 0.25) or stool consistency (MD -0.11 Bristol Stool Scale points, 95% CI -0.31, 0.09, p = 0.29; I²=0%, p = 0.97) compared to control.

Overall, 77 of 127 (61%) participants responded to senna and 36 of 127 (28%) responded to control, and this approached statistical significance (RR 2.78, 95% CI 0.93, 8.27, p = 0.07; I²=80%, p = 0.03). Senna did not impact stool frequency compared to control (MD 4.2 bowel movements/week, 95% CI -2.5, 10.9, p = 0.22; I²=99%, p < 0.00001).

Overall, 32 of 47 (68%) participants responded to magnesium oxide and 9 of 47 (19%) responded to control (RR 3.32, 95% CI 1.59, 6.92, p = 0.001; I²=30%, p = 0.23). Magnesium oxide improved stool frequency (MD 3.7 complete spontaneous bowel movements/week, 95% CI 1.4, 6.0, p = 0.002; I²=75%, p = 0.05) and stool consistency (MD 1.14 Bristol Stool Scale points, 95% CI 0.48, 1.79, p = 0.0007; I²=45%, p = 0.18) compared to control. Magnesium oxide reduced the severity of straining (MD -1.1 points, 95% CI -1.6, -0.5, p = 0.0001; I²=71%, p = 0.07; 5-point scale, lower score denotes less severe symptoms) compared to control.

In conclusion, magnesium oxide supplements are effective in the management of chronic constipation, showing improvements in several cardinal symptoms. Senna and kiwifruit supplements did not impact constipation symptoms; however, findings were based on a small number of studies. No studies in this review were at low risk of bias.

References

1. Lacy BE, Shea EP, Manuel M *et al.* (2021). *PloS One* 16, e0243318.