

Livaux® & Gold Kiwifruit Clinical Science Summary

Summary of clinical science conducted on Livaux® and whole gold kiwifruit.

Product	Daily dose	Intervention period	RCT	Population	n	Study Focus			Statistically Significant Benefits	Ref
						Gastrointestinal Health	Immune Health	Mental Health		
Livaux	600 mg	4 weeks	✓	Healthy, constipated	45	✓			Prebiotic - ↑ in F. prau ↑ bowel movements Softer stools Improved constipation symptoms and quality of life	[1]
Livaux	2,400 mg	4 weeks	✓	Healthy, no constipation	19	✓			↑ bowel movements	[2]
				FC	9				Prebiotic - ↑ in F. prau Improved GI symptoms	[3]
Whole kiwifruit	3 x Gold3 kiwifruit	4 weeks	✓	FC/IBS-C	32	✓			↑ bowel movements Softer stools Improved constipation, abdominal pain and indigestion symptoms.	[4]
Whole kiwifruit	3 x Gold3 kiwifruit with or without skin	4 weeks	✗	IBS-C	19	✓	✓		↑ bowel movements ↓ abdominal pain ↓ pro-inflammatory cytokine levels	[5]
Whole kiwifruit	2 x Gold3 kiwifruit	4 weeks	✓	FC/IBS-C	24	✓			Improved constipation & indigestion symptoms ↓ bowel movements Softer stools	[6]
Whole kiwifruit	4 x Hort16A gold kiwifruit	4 weeks	✓	Healthy, elderly	32		✓		↓ severity and duration of cold & flu symptoms ↑ vit C, α-tocopherol, lutein/zeaxanthin and folate ↓ lipid peroxidation	[7]
Whole kiwifruit	2 x Hort16A gold kiwifruit	4 weeks (5 days a week)	✓	Children (2-5 yrs)	66		✓		↓ incidence of a cold or flu-like illness Improved cold & flu associated symptoms	[8]
Whole kiwifruit	1.5 x Gold3 kiwifruit	8 hours	✓	Non-smoking males	9		✓		↑ vit C	[9]
Whole kiwifruit	2 x Hort16A kiwifruit	16 weeks	✓	Healthy women, low iron	89		✓		↑ serum ferritin	[10]
Whole kiwifruit	2 x Hort16A kiwifruit	6 weeks	✗	Young adult males	35			✓	↓ mood disturbance and fatigue ↑ vigour	[11]

FC = functional constipation

IBS-C = irritable bowel syndrome – constipation dominant

Livaux® is a clinically proven prebiotic which provides comparable increases in bowel movements to 3 whole gold kiwifruit. Further research on whole gold kiwifruit indicates potential benefits of Livaux could extend to immune and mental health.



Clinical studies details

Product	Dose and Intervention period	Study design, population	Study Focus	Clinical Endpoint Key Results		Ref
				Parameters assessed	Observed benefit	
Livaux®	600 mg/day; 4 weeks each	Multi-centered, randomized, double-blind, placebo-controlled, parallel study Healthy with constipation, n = 45	Gastrointestinal health	Frequency of bowel movements Stool consistency GI symptoms Faecal microbial populations	Significant increase in the relative abundance of Faecalibacterium prausnitzii (p = 0.047) 2-fold increase in 70% of participants Significant increase in weekly CSBM +1.78 (at endpoint, p < 0.001 vs baseline) Significantly softer stools, BSS +0.36 (p = 0.020 vs baseline) Significant improvement in symptoms of constipation and quality of life scores (p < 0.001 vs baseline)	[1]
Livaux®	2,400 mg/day; 4 weeks, 2-week washout	Randomised, double-blind, placebo-controlled, crossover Healthy (no constipation), n = 19 Functionally constipated, n = 9	Gastrointestinal health	Frequency of bowel movements	Healthy Group: Significant increase in weekly BM +0.84 in whole group (p = 0.009 vs washout) +1.4 in responders (p = 0.001 vs washout)	[2]
				Stool consistency GI symptoms Faecal microbial populations	Functionally Constipated Group: Significant increase in the relative abundance of Faecalibacterium prausnitzii 2-fold increase (3.4 -> 7.0%, p = 0.024), net increase in 89% of participants Significant improvement in symptoms of digestive discomfort	
Whole gold kiwifruit	3 x Gold3 (Zesy002) kiwifruit OR 2.5 tsp Metamucil® daily 4 weeks, 4-week washout	Randomised cross-over, single-blinded Functional constipation or IBS-C, n = 32	Gastrointestinal health	Frequency of bowel movements Stool consistency GI symptoms	Significant increase in weekly CSBM +3.0 (p < 0.05 vs baseline and Metamucil) Significantly softer stools, BSS +0.91 (p < 0.05 vs baseline and Metamucil) Significant improvement in constipation, abdominal pain and indigestion symptoms.	[4]
Whole gold kiwifruit	3 x Gold3 (Zesy002) kiwifruit with skin OR 3 x Gold3 (Zesy002) kiwifruit without skin daily 4 weeks, 4-week washout	Randomised cross-over, single-blinded IBS-C, n = 19 Healthy, n = 19	Immune and gut health	Plasma cytokine levels (TNF-α, IL-6, IL-10) Stool frequency and consistency	Significant decrease (p < 0.001) in TNF-α (pro-inflammatory cytokine) in both groups with kiwifruit with skin, and in the healthy group with kiwifruit without skin. Increase in bowel frequency – only reached significance in IBS-C group consuming fruit with skin +2.5 (p < 0.001 vs baseline). Significantly softer stools in healthy group (had lower baseline BSS than IBS-C group), BSS +0.7 (p < 0.001 vs baseline) Significant reduction in pain in IBS-C group with kiwifruit with skin (p = 0.004).	[5]
Whole gold kiwifruit	2 x Gold3 (Zesy002) kiwifruit OR 1.5 teaspoons (7.5 g) psyllium 4 weeks, 4-week washout	Randomised cross-over, single-blinded IBS-C, n = 13 FC, n = 11 Healthy, n = 32	Gastrointestinal health	Gastrointestinal symptoms (GSRS) Stool frequency	Significant improvement in constipation and indigestion scores from baseline with the interventions: -1.08 in constipation domain (FC group), -0.03 (IBS-C group) vs -0.44 and -0.45, respectively with psyllium. -0.54 in indigestion domain (FC group), -0.27 (IBS-C), vs -0.33 and +0.11, respectively with psyllium No significant difference between gold kiwifruit and psyllium. Significant increase in CSBM compared to baseline (+0.99 (FC) and +1.08 (IBS-C). No statistical difference between kiwifruit and psyllium. Gold kiwifruit reduced straining and was significantly different to psyllium. Both gold kiwifruit and psyllium significantly softened stool consistency.	[6]
Whole gold kiwifruit	2 freeze-dried bananas OR 2 fresh gold (Hort16A) and 2 freeze-dried gold kiwifruit daily 4-weeks, 4-week washout	Randomised, crossover 32 community dwelling adults, >65 yrs	Upper respiratory tract health/immunity	Wisconsin Upper Respiratory Symptom Survey-21 Plasma antioxidant status, immune function and inflammatory markers	Gold kiwifruit significantly reduced the severity and duration of head congestion, and the duration of sore throat. Gold kiwifruit significantly increased plasma vitamin C, α-tocopherol and lutein/zeaxanthin concentrations, and erythrocyte folate concentrations. Gold kiwifruit significantly reduced plasma lipid peroxidation.	[7]
Whole gold kiwifruit	2 servings bananas OR 2 servings gold (Hort16A) kiwifruit, daily 5 days/week 4-weeks, 4-week washout	Randomised, crossover 66 children attending daycare (pre-school), 2 – 5 yrs.	Upper respiratory tract health/immunity	Symptoms and overall colds and flu-like illnesses recorded by parents using the Canadian Acute Respiratory Illness and Flu scale (CARIFS)	Overall incidence of a cold or flu-like illness was considerably reduced when children ate kiwifruit compared with banana. Significant improvements in symptoms with gold kiwifruit consumption.	[8]
Whole gold kiwifruit	200 mg chewable vit C tablet OR Equivalent dose from Sungold (Gold3) kiwifruit Sampled over 8 hours following single dose	Randomised cross-over, single-blinded Non-smoking males, n = 9	Vitamin C bioavailability	Plasma & urinary ascorbate levels	Plasma ascorbate levels increased from 0.5 hrs after intervention (P = 0.008) Increase in urinary ascorbate 2 hrs post intervention with enhanced ascorbate excretion with the kiwifruit intervention (P = 0.016)	[9]
Whole gold kiwifruit	Iron-fortified breakfast cereal, milk plus: 2 gold (Hort16A) kiwifruit OR one banana daily 16 weeks	Randomised, stratified 89 healthy women with low iron stores (serum ferritin ≤ 25 µg/L, Hb ≥ 115 g/L)	Iron status in women	Serum ferritin, haemoglobin, transferrin receptor, C-reactive protein, carotenoids and plasma ascorbic acid.	Median serum ferritin increased significantly in the kiwifruit group (n 33) compared with the banana group (n 36). Median soluble transferrin receptor concentrations decreased significantly in the kiwifruit group compared with the banana group. Consumption of an Fe-fortified breakfast cereal with kiwifruit compared with banana improved Fe status.	[10]
Whole gold kiwifruit	Half a kiwifruit OR 2 whole kiwifruit daily 6 weeks	Randomised, parallel 35 young adult males	Mood improvement	Profile of Mood States questionnaires were completed at baseline and following the intervention.	35% (p = 0.06) trend towards a decrease in total mood disturbance and a 32% (p = 0.063) trend towards a decrease in depression were observed in the two kiwifruit/d group. Participants with higher baseline mood disturbance exhibited significant: • decrease in total mood disturbance (38% (p = 0.029)) • decrease in fatigue (38% (p = 0.048)) • increase in vigour (31% (p = 0.024)) There was also a trend towards a decrease in depression (34 % (P = 0.075)).	[11]

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