

Study confirms that orange juice can result in weight loss when combined with meals

Some healthcare professionals express concerns that drinking fruit juice may cause patients to put on weight. This was examined in three randomised controlled trials.

The first (1) recruited a group of 78 obese adults who wished to lose weight. All participants were given a 12-week low energy diet but half were randomised to receive a daily supply of 100% orange juice (pure juice which has no added sugar) and asked to drink 500 ml daily.

The results revealed similar weight and fat loss in both groups of dieters. This was despite the additional 200kcal and 46g of sugar consumed daily by the orange juice group. The authors speculated that bioactive constituents in 100% orange juice, such as flavanones, carotenoids and pectin, resulted in energy compensation across the day. Insulin sensitivity, lipid profile and inflammatory status were all significantly improved in the group receiving 100% orange juice.

The second (2), more recent, study recruited 41 adults with a high waist circumference to take part in a randomised crossover trial. A daily supply of 500ml 100% orange juice was provided in both 28-day arms of the trial with a 3-week wash-out in between. Two types of orange juice were used – blood orange or blonde orange differing in anthocyanin levels.

In personal communication, the authors of the study noted that participants did not gain weight during the study (+30g on average, not statistically significant) which is remarkable given the additional energy and sugars provided by 500ml of orange juice and the fact that the participants were already at risk of obesity. The published study reported that no significant changes in blood lipids, blood pressure, fasting glucose levels, fructosamine, HbA1c or c-reactive protein were seen during either arm of the study.

The third (3), recruited 26 healthy adults to a 2-week randomised crossover trial with a 1-week wash-out. Participants were asked to consume 20% of their daily energy as pure orange juice, providing on average of 1.3 litres per day and 112g of natural sugars. The predicted weight gain on this basis was 855 ±150g. When orange juice was consumed between meals, fat mass increased by 1kg on average ($p<0.05$) but when orange juice was consumed with a meal, average fat mass significantly reduced by 2.5kg ($p<0.05$). Glycemic control was also better when orange juice was consumed at a meal.

These findings contradict the prevailing view that regular fruit juice consumption promotes energy overconsumption and excess weight gain. In contrast, even the large amounts of 100% orange juice given in these studies to obese or 'at risk' populations did not adversely affect weight or metabolic markers. Therefore, the small glass of 150-200ml advised in several countries' recommendations is unlikely to present any risk to health or weight management. Indeed, it could be a healthy daily habit due to the rich nutritional content.

For more information, see:

(1) Ribeiro C et al. (2017) Orange juice allied to a reduced-calorie diet results in weight loss and ameliorates obesity-related biomarkers: A randomized controlled trial. *Nutrition* 38: 13–19. Available at: [http://linkinghub.elsevier.com/retrieve/pii/S0899-9007\(17\)30004-7](http://linkinghub.elsevier.com/retrieve/pii/S0899-9007(17)30004-7)

(2) Hollands WJ *et al.* (2018) 4-week consumption of anthocyanin-rich blood orange juice does not affect LDL-cholesterol or other biomarkers of CVD risk and glycaemia compared with standard orange juice: a randomised controlled trial. *British Journal of Nutrition* 119, 415-421. Available at: www.ncbi.nlm.nih.gov/pubmed/29498348

(3) Hägele FA et al. (2018) High orange juice consumption with or in-between three meals a day differently affects energy balance in healthy subjects. *Nutr Diabetes* 8(1): 19. Available at: www.ncbi.nlm.nih.gov/pubmed/29695707