

## **Apple cider vinegar aids weight management in obesity, small clinical trial suggests**

*Its consumption also linked to falls in blood glucose, triglycerides, and cholesterol*

Small daily quantities of apple cider vinegar for 12 weeks aid weight management in people who are overweight or obese, suggest the results of a small comparative clinical trial, published in the open access journal ***BMJ Nutrition, Prevention & Health***.

Over a period of 3 months apple cider vinegar consumption was associated with significant falls in body weight, body mass index (BMI), and in levels of blood glucose, triglycerides, and cholesterol, prompting the researchers to suggest that it may be a useful supplementary treatment for obesity.

Since 1975, the global prevalence of obesity has nearly tripled, and The World Obesity Federation predicts that more than half the world's population will be overweight or obese by 2035.

In recent years, apple cider vinegar has become increasingly popular as a weight loss remedy, say the Lebanese researchers, who set out to test its potential in 120 young people (46 men and 74 women; average age 17) who were overweight or obese, with a BMI of between 27 and 34.

Each participant was randomly assigned to one of four groups. Those in the first three were asked to drink apple cider vinegar once per day in quantities of 5, 10 or 15 ml, respectively (containing 5% acetic acid diluted in 250 ml of water) for a period of 12 weeks, first thing in the morning, before food. Those in the fourth group were given a dummy (placebo) liquid instead.

The timing was chosen to avoid the potential influence of other food and drink, and with a view to its potential to reduce appetite and increase satiety.

Participants recorded what they ate in a diet diary, and provided information on their physical activity: diary entries and physical activity records scarcely differed between the groups throughout the study.

Compared with those given the placebo, the apple cider drinkers lost significant amounts of weight and reduced their BMI, with those drinking the highest 'dose' of 15 ml experiencing the largest decreases after 12 weeks.

On average, those who drank apple cider vinegar once daily during that period lost 6–8 kg in weight and reduced their BMI by 2.7–3 points, depending on the dose.

At daily quantities of 5 ml, average weight fell from 79 kg to 74 kg, at 10 ml this reduced from 79 kg to 72 kg, and at 15 ml, average weight dropped from 77 kg to just over 70 kg.

Similarly, BMIs fell from nearly 31 to nearly 29, and from just over 30 to just over 27, and from 30 to just over 27, respectively.

The falls in weight and BMI were much smaller among those in the placebo group over the same time period: from just over 79 kg to just under 79 kg in weight, and from 30.7 to 30.6 BMI.

All 3 different quantities of apple cider vinegar were also associated with significant reductions in waist and hip measurements and body fat ratio compared with the placebo. These reductions were similar irrespective of dose, suggesting the effect didn't depend on the quantity, say the researchers.

Consumption of apple cider was also linked to falls in serum glucose, triglycerides and cholesterol, although these did seem to depend on the size of the dose, with the largest falls among those taking 15 ml once per day.

The study sample was small, so potentially limiting the generalisability of the findings, and a period of 12 weeks isn't long enough to gauge the possible long-term side effects of apple cider vinegar, acknowledge the researchers.

But, they say: "These results suggest that apple cider might have potential benefits in improving metabolic parameters related to obesity and metabolic disorders in obese individuals."

And they conclude: "The results might contribute to evidence-based recommendations for the use of [apple cider vinegar] as a dietary intervention in the management of obesity.

"The study could stimulate further research in the field, prompting scientists to explore the underlying mechanisms and conduct similar studies in other populations."

Shane McAuliffe, Senior Visiting Academic Associate, NNEdPro Global Institute for Food, Nutrition and Health, which co-owns BMJ Nutrition Prevention & Health with BMJ, said: "Whilst in this study design the intervention has demonstrated feasibility and effectiveness serving to encourage further trials designed to assess scalability and wider applications, at this stage caution should be exercised regarding the generalisability of the conclusions drawn on the independent effects of apple cider vinegar on the outcomes observed.

"Further research in this area would need to include detailed reporting of dietary recall or nutritional intake to explain any potential confounders and future explanatory trials would further elucidate mechanisms of impact on biochemical markers (lipids and blood glucose) in addition to weight loss."