

Effects of kefir consumption on cardiometabolic risk factors: A systematic review and meta-analysis of randomized controlled trials

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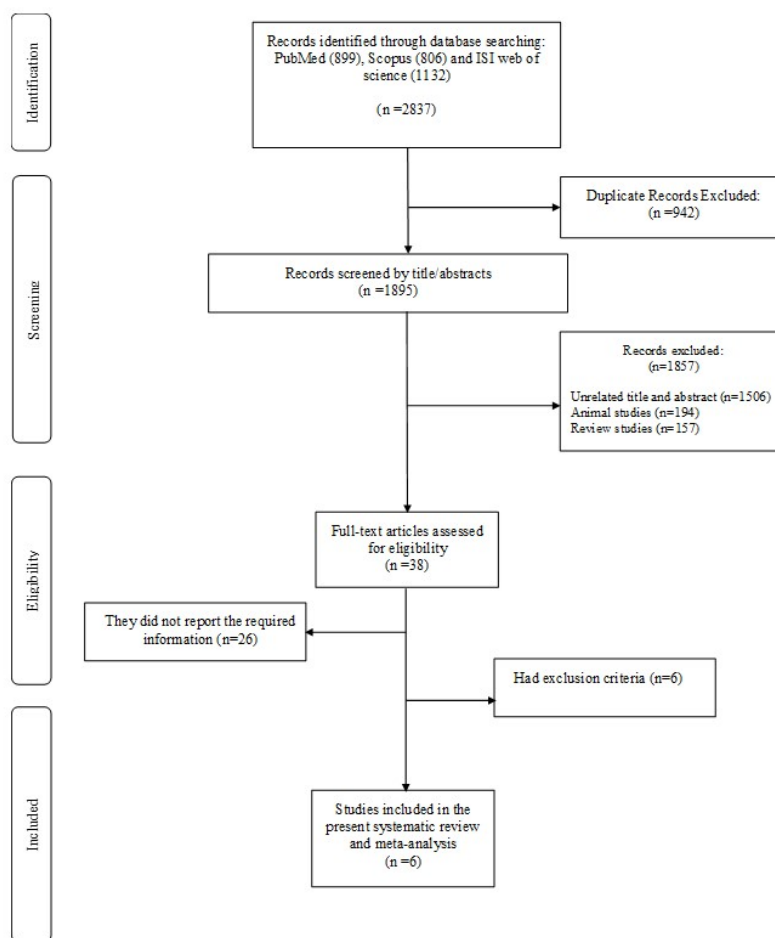
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Abstract

Background. Fermentation of lactose in milk by bacteria and yeasts naturally present in kefir grains produces a beverage that has been suggested to have cardiovascular benefit. This systematic review and meta-analysis of randomized controlled trials (RCTs) aimed to evaluate the effects of this kefir beverage on cardiometabolic risk factors. **Methods.** Literature search utilised PubMed, Scopus, ISI Web of Science, and Google Scholar for the articles published from inception until June 2021. Cardiometabolic risk indices extracted included insulin and insulin resistance (HOMA-IR), total cholesterol (TC), triglyceride (TG), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), fasting blood sugar (FBS), haemoglobin A1c (HbA1c) and body weight (BW). In total, six RCTs (314 subjects) were selected for the meta-analysis. Inverse-variance weighted mean difference (WMD) with a 95% confidence interval (CI) was calculated for the mean changes in TC, TG, HDL-C, LDL-C, FBS, HbA1c and BW compared to baseline. A random effects model was used to estimate the pooled WMD. **Results.** Kefir intake significantly reduced fasting insulin (WMD:-3.69 micro-IU/mL, 95% CI:-6.30 to -1.07, $p=0.006$, $I^2=0.0\%$) and HOMA-IR (WMD:-2.56, 95% CI:-3.82 to -1.30, $p<0.001$, $I^2=19.4\%$). No effect on TC (WMD:-9.30mg/dL, 95% CI:-20.00 to 1.39, $p=0.088$), TG (WMD:-1.35 mg/dL, 95% CI:-13.28 to 10.58, $p=0.824$), HDL-c (WMD:0.70mg/dL, 95% CI:-1.30 to 2.71, $p=0.491$), LDL-C (WMD:-0.71mg/dL, 95% CI:-13.16 to 11.72, $p=0.910$), FBS (WMD: -2.73 mg/dL, 95% CI: -7.56 to 2.09, $p=0.267$), HbA1c (WMD:-0.58 %, 95% CI: -1.79 to 0.61, $p=0.339$) or body weight (WMD:-0.78 kg, 95% CI: -2.75 to 1.19, $p=0.439$) were found for kefir treatment. **Conclusion.** Kefir has a beneficial effect on decreasing insulin resistance; however, no effect was seen on BW, FBS, HbA1C or the lipid profile.

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