Silymarin in type 2 diabetes mellitus: a systematic review and meta-analysis of randomized controlled trials

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OBJECTIVES

Type 2 diabetes mellitus (T2DM) is associated with increased risk of cardiovascular disease and nephropathy – now the leading cause of end stage renal disease and dialysis in Europe and United States. Inflammation and oxidative stress plays a pivotal role in the development of diabetic complications.

Silymarin, an herbal drug with antioxidant and anti-inflammatory properties, may improve glycemic control and prevent the progression of the complications.

The aim was to evaluate the benefits and risks of silymarin supplementation to patients with T2DM

METHODS

We conducted a systematic review of randomized controlled trials. Electronic databases: Pubmed, Medline, EMBASE, Cochrane Central – Cochrane Controlled Trials Register, AMED (Allied and Complementary Medicine), EBM Reviews – ACP Journal Club, and MD Consult were searched up to June 2015 without language restriction.

Meta-analysis using a random-effect model was done for all-cause mortality, diabetes complication, glycemic control, lipids control and treatment-specific side effects.

RESULTS

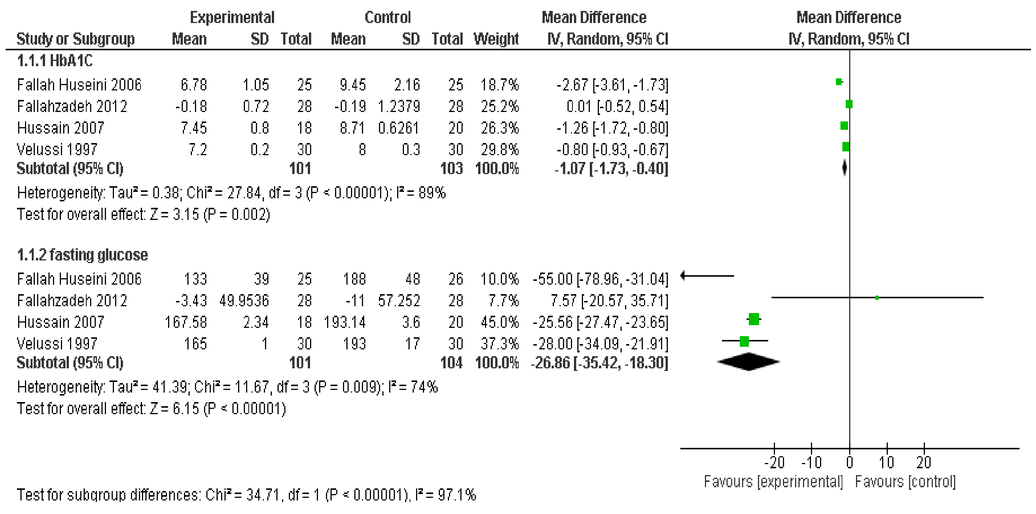

Figure 1. Glycemic control outcomes

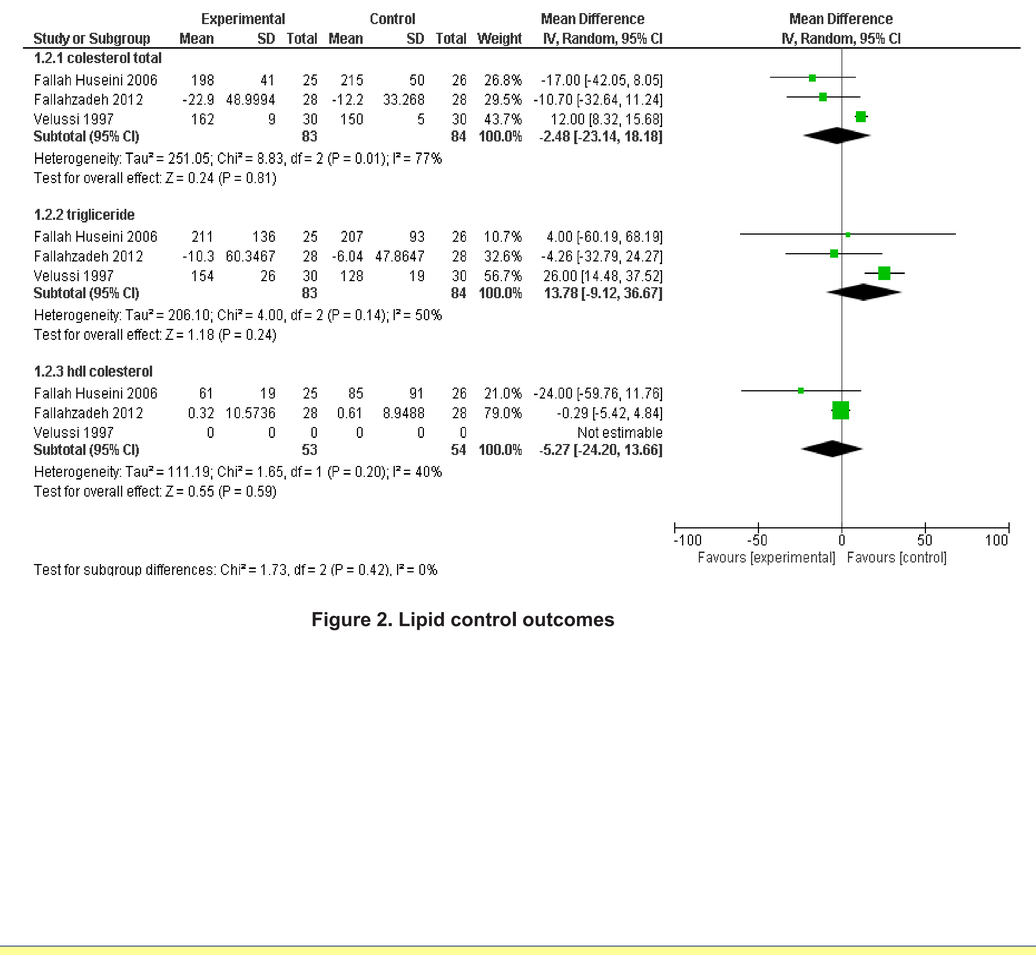

Figure 2. Lipid control outcomes

Five random controlled trials (RCTs) with 270 patients with T2DM were included in the study.

In low- to moderate-quality evidence, routine silymarin administration was associated with a significant reduction in fasting blood glucose levels (Mean Difference [MD] (-26.86 mg/dl; 95% CI [-35.42, – 18.30]) in four trials - see figure 1;

Similarly, compared with placebo, silymarin administration reduced significantly HbA1c levels ([MD] - 1.07; 95 % C.I. [-1.73-0.40])

Three studies reported data on lipid control. No difference was found between the two arms – MD for cholesterol levels was -2.48 mg/dl; 95 % C.I.-23.14-18.18; MD for HDL cholesterol was -5.27 mg/dl; 95 % C.I. -24.20 – 13.66; MD for triglyceride 13.87 mg/dl; 95 % C.I. -9.12 – 36.67 – see figure 2

Only one small study, with a short follow-up reported a reduction of proteinuria in patients with overt nephropathy - mean difference in change in urinary albumincreatinine ratio between the 2 groups was –347 (95% CI, –690 to –4) mg/g.

Mean values for changes in renal outcomes (serum creatine, eGFR – estimated glomerular filtration rate) were not significantly different between the two groups- only in one small study.

CONCLUSIONS

Silymarin interventions might improve glycemic control in patients with type 2 DM. Benefits for silymarin on proteinuria and CKD progressions are uncertain.

However, being aware of the low quality of the available evidence and elevated heterogeneity of these studies, no recommendation can be made and further studies are needed.

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