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The effect of mycoprotein intake on biomarkers of human health: a systematic review and meta-analysis

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BACKGROUND

The problem with red and processed meats

Overconsumption of red and processed meats is leading to heart disease, cancer, diabetes and premature death. This is because these foods are energy dense and have harmful concentrations of saturated fats, trans fats and sodium.

Are meat analogues a solution?

Consumers are turning towards plant- and fungus- based meat analogues that seek to mimic the taste, texture and cooking experience of meat products. Plant-based analogues use proteins from pea, soy and wheat. randomised trials have shown that consumption of these products improves blood lipids, blood pressure and blood glucose.

What is mycoprotein?

Mycoprotein is a fungus-derived protein source manufactured through a process of fermentation and the basis of a range of meat analogue products. No synthesis of evidence exists regarding the effect of mycoprotein intake on human health.



RESEARCH OBJECTIVE

We conducted a **systematic review and meta-analysis** of the effects of mycoprotein intake on selected biomarkers of human health.

METHODS

Study eligibility:

- ✓ Any language
- ✓ Published before 16 August 2022
- ✓ Randomised control trial
- ✓ Administered a mycoprotein intervention against a mycoprotein-free control arm
- ✓ Reported outcomes included blood lipids, blood glucose, insulin, blood pressure, body weight

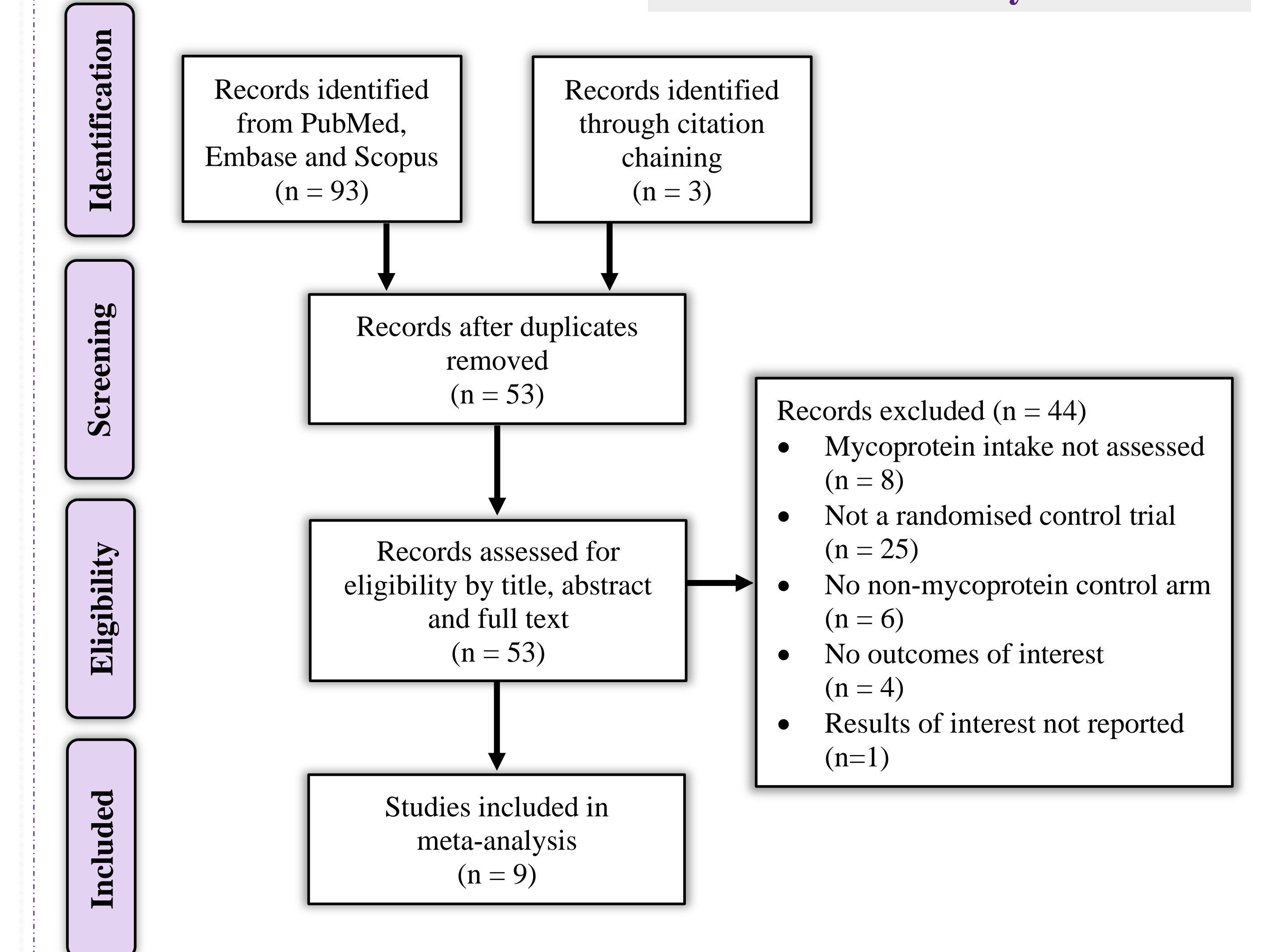
Databases searched: PubMed, Embase, Scopus

Assessments and analyses:

- ✓ Assessed for risk of bias using the Cochrane risk-of-bias tool for randomised trials
- ✓ An inverse-variance-weighted, random-effects meta-analysis model used to assess the effects of mycoprotein intake across each biomarker

RESULTS

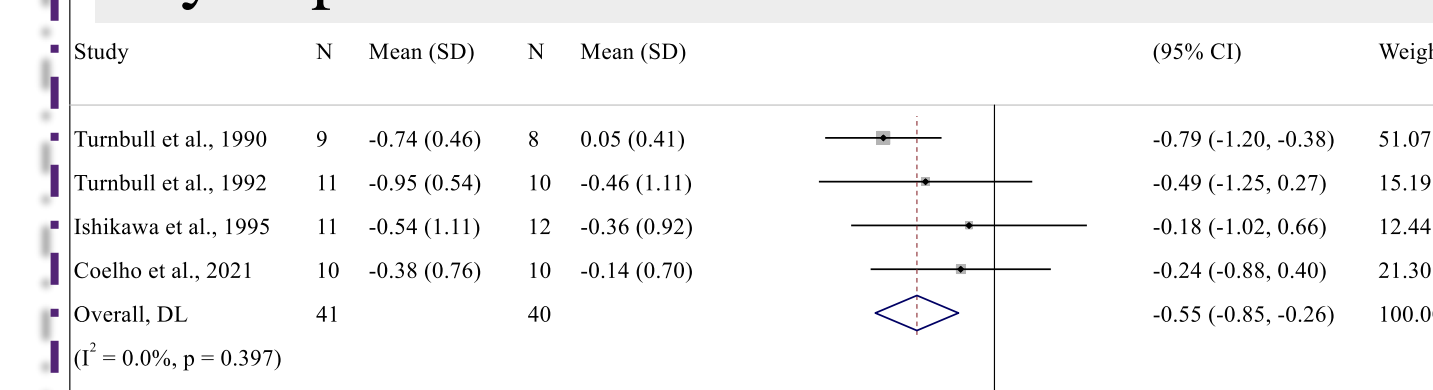
Flowchart of study selection



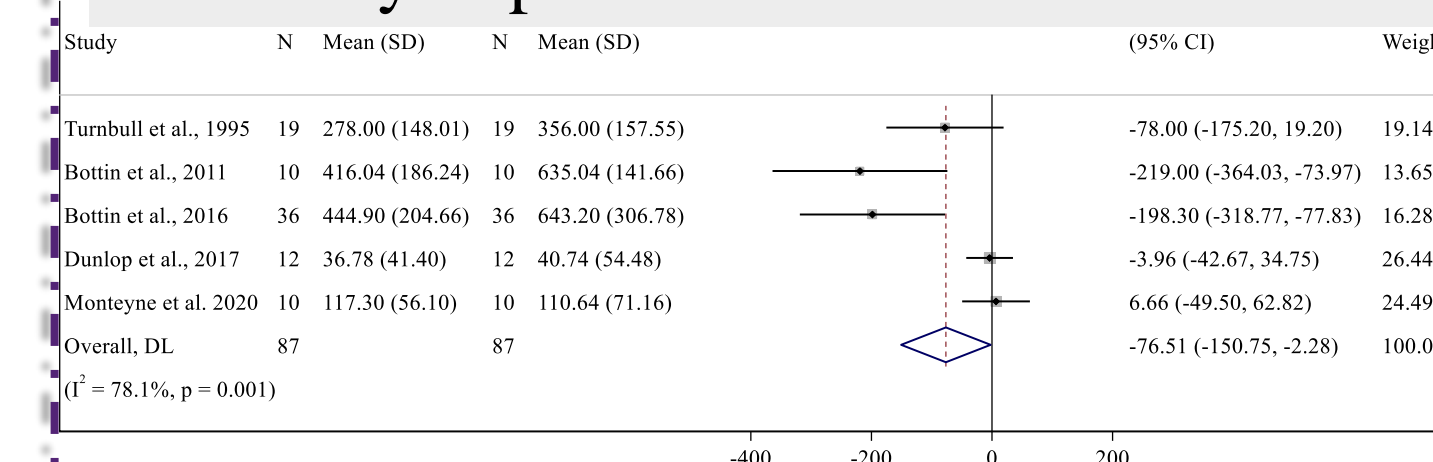
Outcomes found: total cholesterol (mmol/L), HDL (mmol/L), LDL (mmol/L), triglycerides (mmol/L), postprandial glucose (30 min, 60 min, 90 min, 120 min) (mmol/L), postprandial insulin (30 min, 60 min, 90 min, 120 min) (pmol/L)

Key findings

Total cholesterol (mmol/L) found to reduce ($P < 0.001$) from mycoprotein intake



Postprandial insulin (30 min) (pmol/L) found to reduce ($P = 0.043$) from mycoprotein intake



CONCLUSIONS

- ❖ There are potentially important effects of mycoprotein intake on the well-established predictors of cardiovascular risk
- ❖ Dietary fibre is the suspected mechanism behind these effects as mycoprotein is high in insoluble dietary fibre
- ❖ Larger scale trials needed that can more precisely define these effects on a wider range of outcomes, over a longer period