



## Health effects of olive oil and the mediterranean diet

## TYPE 2 DIABETES

(PREVENTION AND MANAGEMENT)

## EFFECT SIZE



High olive oil intake was associated with a decreased risk of T2D and improved glucose metabolism in persons with T2D.

Schwingshackl, L., et al., Olive oil in the prevention and management of type 2 diabetes mellitus: a systematic review and meta-analysis of cohort studies and intervention trials. *Nutr Diabetes*, 2017. 7(4): p. e262.

## What is the effect?



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## WHAT IS THE QUALITY OF THE EVIDENCE?

4 prospective cohort studies

Low quality for T2D risk

29 randomised controlled trials

Moderate quality evidence for T2D risk

## KEY RESULTS

Highest vs. lowest category of olive oil use reduced the risk of T2D by 16%

(RR = 0.84; 95% CI: -0.77 to -0.92; P<0.01) (5 studies)

The dose-response meta-analysis found that each 10-gram increase in olive oil reduced the risk of T2D by 9% (RR = 0.91; 95% CI: -0.87 to -0.95; P<0.01) (4 studies). There was evidence of a non-linear relationship (P<0.01), where the risk of T2D decreased by 13% with increasing intake of olive oil up to ~15-20 grams/day, and no additional benefit above this.

## T2D RISK

Olive oil resulted in a reduction in HbA1c vs. the control group

(Mean difference = -0.27%; 95% CI -0.03 to -0.17; P<0.01) (22 studies)

Subgroup analysis by the type of control showed a significant effect vs. a low-fat diet only (Mean difference = -0.35%; 95% CI -0.48 to -0.23; P<0.01) (8 studies). There was no significant difference vs. fish oil (13 studies) or vs. PUFA-rich diets (2 studies). The reduction of HbA1C by 0.35% vs. a low-fat diet is clinically significant: a decrease in HbA1c of just 0.1% has previously been estimated to reduce cardiovascular disease by about 7% in persons with T2D.

## GLYCEMIC CONTROL: HBA1C

Olive oil resulted in a reduction in fasting plasma glucose vs. control group

(Mean difference = -0.44mmol/L; 95% CI -0.66 to -0.22; P<0.01) (25 studies)

Subgroup analysis by the type of control found a reduction in fasting plasma glucose vs. fish oil (Mean difference = -0.29mmol/L; 95% CI -0.54 to -0.04; P=0.02) (14 studies) and vs. PUFA-rich oils (Mean difference = -0.85mmol/L; 95% CI -1.35 to -0.35; P<0.01) (4 studies). There was no significant difference vs. low-fat diets (8 studies).

## GLYCEMIC CONTROL: FASTING PLASMA GLUCOSE

## WHAT TO KEEP IN MIND?

## Limitations

- There was considerable heterogeneity in the trial design, with the number of participants ranging from n=6 to n=215, and the trial length ranging from 2 weeks to 4.1 years.
- The type of olive oil was not always specified.
- There were only a small number of cohort studies available to determine the association with T2D risk (4 studies).

## WHAT'S THE BOTTOM LINE?

Olive oil reduced T2D risk and improved measures of glycemic control in people with T2D, at clinically significant levels.

Since improvements in these outcomes have previously been described in individuals adhering to a Mediterranean diet, olive oil may be an important mediating factor in this dietary pattern.

## OTHER REVIEWS

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