



... just the FACTS

Study summaries examining the latest science on beef's place in a healthy diet

META-ANALYSIS FINDS RED MEAT DOES NOT IMPACT TYPE 2 DIABETES BLOOD MARKERS

OBJECTIVES:

This meta-analysis of randomized controlled trials evaluated the effects of diets containing red meat (such as beef, pork, and lamb), compared to diets with lower or no red meat, on biomarkers of risk for type 2 diabetes in adults.

STUDY DESIGN:

PRISMA guidelines were used to perform this systematic review and meta-analysis. The search was designed to identify randomized controlled trials that examined red meat intake and blood markers of glucose homeostasis.

DATA:

The systematic review identified 21 relevant randomized controlled trials in adults (≥ 18 years). These dietary intervention trials compared fresh/minimally processed or processed red meat as the main intervention compared to a control with no red meat or a lower level of red meat. Most studies included unprocessed red meat or did not specify the type of red meat included in the intervention. They reported baseline and post-treatment measures of glycemia, insulinemia, insulin sensitivity, pancreatic beta-cell function, or other markers of glucose tolerance.

METHODS:

In this meta-analysis, the pooled estimate for each outcome was expressed as the standardized mean difference between the red meat intervention and the comparator intervention with less or no red meat. The Cochrane risk of bias tool for randomized trials was used to assess the risk of bias for each relevant study outcome. The GRADE method was used to assess the quality of the evidence for each outcome.

RESULTS:

This meta-analysis found that:

- Compared to diets with reduced or no red meat intake, red meat intake:
 - had no significant impact on multiple known biomarkers of risk for type 2 diabetes including:
 - insulin sensitivity, insulin resistance, fasting glucose, glycated hemoglobin (HbA1c), pancreatic beta-cell function, and glucagon-like peptide-1 (GLP-1)
 - significantly lowered postprandial glucose (the spike in blood sugar after a meal) in the three studies that assessed this in patients with type 2 diabetes or metabolic dysfunction
- Replacing red meat with plant proteins had no effect on glycemia or insulinemia.
- Subgroup analysis in adults with type 2 diabetes showed that diets containing red meat lowered fasting glucose and resulted in a marginally significant improvement in insulin sensitivity.

CONCLUSION:

The results of this meta-analysis of randomized controlled trials suggest red meat intake does not impact most glycemic and insulinemic risk factors for type 2 diabetes.

Sanders LM, Wilcox ML and Maki KC. Red meat consumption and risk factors for type 2 diabetes: a systematic review and meta-analysis of randomized controlled trials. Eur J Clin Nutr 2023;77(2):156-165.