

The effects of a nutraceutical combination on plasma lipids and glucose: A systematic review and meta-analysis of randomized controlled trials.

Pirro M¹, Mannarino MR², Bianconi V², Simental-Mendia LE³, Bagaglia F², Mannarino E², Sahebkar A⁴.

Author information

- 1 Unit of Internal Medicine, Angiology and Arteriosclerosis Diseases, Department of Medicine, University of Perugia, Perugia, Italy. Electronic address: matteo.pirro@unipg.it.
- 2 Unit of Internal Medicine, Angiology and Arteriosclerosis Diseases, Department of Medicine, University of Perugia, Perugia, Italy.
- 3 Biomedical Research Unit, Mexican Social Security Institute, Durango, Mexico.
- 4 Biotechnology Research Center, Mashhad University of Medical Sciences, Mashhad 9177948564, Iran; Metabolic Research Centre, Royal Perth Hospital, School of Medicine and Pharmacology, University of Western Australia, Perth, Australia. Electronic address: SahebkarA@mums.ac.ir.

Abstract

Dyslipidemia and hyperglycemia are associated with an increased risk of ischemic cardiovascular disease. Positive effects of a nutraceutical combination comprising red yeast rice, berberine, policosanol, astaxanthin, coenzyme Q10 and folic acid (NComb) on plasma lipid and glucose levels have been reported in some but not all clinical trials. To address this inconsistency, we tried to estimate the size of lipid- and glucose-lowering effects of NComb through a systematic review and meta-analysis of randomized controlled trials. A systematic literature search in PubMed-Medline, SCOPUS and Google Scholar databases was conducted to identify randomized controlled trials investigating the effects of NComb on plasma lipids and glucose levels. Inverse variance-weighted mean differences (WMDs) and 95% confidence intervals (CIs) were calculated for net changes in lipid and glucose levels using a random-effects model. Random-effects meta-regression was performed to assess the effect of putative confounders on plasma lipid and glucose levels. Fourteen trials (1670 subjects in the NComb arm and 1489 subjects in the control arm) met the eligibility criteria for lipid analysis and 10 trials (1014 subjects in the NComb arm and 962 subjects in the control arm) for glucose analysis. Overall, WMDs were significant for the impact of NComb supplementation on plasma levels of total cholesterol (-26.15mg/dL, $p<0.001$), LDL-cholesterol (-23.85mg/dL, $p<0.001$), HDL-cholesterol (2.53mg/dL, $p<0.001$), triglycerides (-13.83mg/dL, $p<0.001$) and glucose (-2.59mg/dL, $p=0.010$). NComb-induced amelioration of lipid profile was not affected by duration of supplementation nor by baseline lipid levels; conversely, a greater glucose-lowering effect of NComb was found with higher baseline glucose levels and longer durations of supplementation. In conclusion, the present results suggest that NComb supplementation is associated with improvement of lipid and glucose profile. Short-term beneficial effects of NComb supplementation appear to be maintained in the long term.

Copyright © 2016 Elsevier Ltd. All rights reserved.

KEYWORDS: Astaxanthin (PubChem CID: 5281224); Berberine; Berberine (PubChem CID: 2353); Cholesterol; Coenzyme Q(10) (PubChem CID: 5281915); Folic acid (PubChem CID: 6037); Glucose; Lipid; Monacolin K (PubChem CID: 53232); Nutraceutical; Red yeast rice