

COCHRANE CAM REVIEW: SUMMARY OF FINDINGS

# Artichoke Leaf Extract for Hypercholesterolemia

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**H**ypercholesterolemia is a condition characterized by an elevated level of total cholesterol in the bloodstream. Cholesterol is a substance that is produced in the body and obtained from foods. The body needs this substance, but too much cholesterol increases a person's risk of developing coronary heart disease (CHD). This condition occurs when excess cholesterol in the bloodstream is deposited in the walls of blood vessels, particularly in the arteries that supply blood to the heart (coronary arteries). The abnormal build up of cholesterol forms clumps (plaque) that narrow and harden artery walls. This condition is called atherosclerosis and can lead to heart attack and stroke.

The two main types of cholesterol are low-density lipoprotein (LDL) and high-density lipoprotein (HDL). Increased levels of LDL, sometimes referred to as "bad" cholesterol, are associated

with the formation of plaques and atherosclerosis. HDL, "good" cholesterol, cleans up excess cholesterol from the body. Cholesterol contained in HDL particles is considered beneficial for cardiovascular health in contrast to LDL cholesterol. A high level of HDL cholesterol seems to protect against cardiovascular disease. The different types of cholesterol, along with triglycerides, make up the total cholesterol count, which can be determined through a blood test.

The concentration of cholesterol and triglycerides in the blood is most often measured by molecular counts (usually millimoles) per unit (liters of blood) or mmol/L. Most experts agree that the level of total cholesterol in high-risk populations should be lower than 5 mmol/L. For HDL cholesterol, the ideal level for men should be higher than 1 mmol/L and for women higher than 1.2 mmol/L. LDL cholesterol levels should be lower than 3 mmol/L. For triglycerides, the ideal level is less than 1.69 mmol/L.

Artichoke (*Cynara scolymus*) is an herbaceous perennial native to southern Europe, northern Africa, and the Canary islands. Its leaves have been used in herbal medicine since Roman times. Studies on the effectiveness of artichoke leaf extract indicate a reduction of serum cholesterol in people with hypercholesterolemia. There is uncertainty, however, about which component of the plant plays the key role in reducing the cholesterol.

**TABLE 1** Results of Meta-analysis: Artichoke Leaf Extract for Hypercholesterolemia

What Was Measured	Placebo	Artichoke Leaf Extract	Quality of Evidence
Mean reduction in total cholesterol at end of treatment	The mean reduction in total cholesterol in the control groups was 0.26 mmol/L.	The mean reduction in total cholesterol in intervention groups was 0.60 mmol/L higher (0.4-0.79 higher). <sup>a</sup>	⊕⊕○○ Low
Mean reduction in LDL cholesterol at end of treatment	We are uncertain of the effect of artichoke extract on the LDL cholesterol level because of very low quality of evidence.		⊕○○○ Very low
Mean reduction in HDL cholesterol at end of treatment	The mean reduction in HDL cholesterol in the control groups was 0.0 mmol/L.	The mean reduction in HDL cholesterol in the intervention groups was 0.0 mmol/L (0.11 lower-0.17 higher). <sup>a</sup>	⊕⊕○○ Low
Mean reduction in triglycerides at end of treatment	The mean reduction in triglycerides in the control groups was 0.12 mmol/L.	The mean reduction in triglycerides in the intervention groups was 0.01 mmol/L lower (0.25 lower-0.22 higher). <sup>a</sup>	⊕⊕○○ Low
Side effects	Not measured in these studies		

<sup>a</sup>The numbers in parentheses show the range in which the actual effect could be. Abbreviations: LDL, low-density lipoprotein; HDL, high-density lipoprotein.

**TABLE 2** Summary of Findings: Artichoke Leaf Extract Compared to Placebo for People With Hypercholesterolemia

Outcomes	Illustrative Comparative Risks <sup>a</sup> (95% Confidence Interval)		No. of Participants	Quality of Evidence (Grade)	Comments
	Assumed risk	Corresponding risk			
	Placebo	Artichoke leaf extract			
Mean total cholesterol reduction mmol/L reduction Follow up: 6-12 wk	The mean total cholesterol reduction in the control groups was 0.26 mmol/L.	The mean total cholesterol reduction in the intervention groups was 0.60 higher (0.4-0.79 higher).	211 (2)	⊕⊕○○ Low <sup>c,d</sup>	
Mean LDL-cholesterol reduction mmol/L reduction Follow up: 6-12 wk	The mean LDL cholesterol reduction in the control groups was 0.12 mmol/L.	The mean LDL-cholesterol reduction in the intervention groups was 0.56 higher (0.34-0.78 higher).	211 (2)	⊕○○○ Very low <sup>c,d,e</sup>	
Mean HDL-cholesterol reduction mmol/L reduction Follow up: 6-12 wk	The mean HDL cholesterol reduction in the control groups was 0.00 mmol/L.	The mean HDL-cholesterol reduction in the intervention groups was 0.02 higher (0.11 lower-0.17 higher).	211 (2)	⊕⊕○○ Low <sup>c,d</sup>	
Mean triglycerides reduction mmol/L reduction Follow up: 6-12 wk	The mean triglycerides reduction in the control groups was 0.12 mmol/L.	The mean triglycerides reduction in the intervention groups was 0.01 lower (0.25 lower-0.22 higher).	211 (2)	⊕⊕○○ Low <sup>c,d</sup>	
Adverse events	See comment.	See comment.			None of these trials reported on adverse events.

<sup>a</sup>The assumed risk is calculated based on the median control group risk across the included studies. The corresponding risk (and its 95% confidence interval [CI]) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

<sup>b</sup>Grade Working Group grades of evidence:

High quality: Further research is very unlikely to change our confidence in the estimate of effect.

Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Very low quality: We are very uncertain about the estimate.

<sup>c</sup>One study has uncertainty about randomization procedure, allocation concealment, and blinding.

<sup>d</sup>Only two small trials with a total of 211 participants.

<sup>e</sup>High level of heterogeneity (I<sup>2</sup> = 85%).

Today, different artichoke extracts are promoted, particularly in Europe, as aids to reduce cholesterol levels and are readily available over the Internet. Artichoke leaf extract can be used in many forms, as dried leaves, powders, liquid extracts, tablets, and capsules.

### What Does the Research Say?

Not all research provides the same quality of evidence. The higher the quality, the more certain we are about what the research says about an effect. The words will (high-quality evidence), probably (moderate-quality evidence), and may (low-quality evidence) describe how certain we are about the effect.

After searching for all relevant studies, the review authors found three studies that were included in this review. One of these studies was only obtained as an abstract and could not be included in the meta-analyses. The two remaining studies compared

artichoke leaf extract with placebo. The findings of these studies on the concentration of cholesterol and triglycerides in the blood are summarized below.

The studies showed that for people with hypercholesterolemia, artichoke extract

1) may reduce the level of total cholesterol,

2) may make little or no difference in the level of HDL cholesterol, and

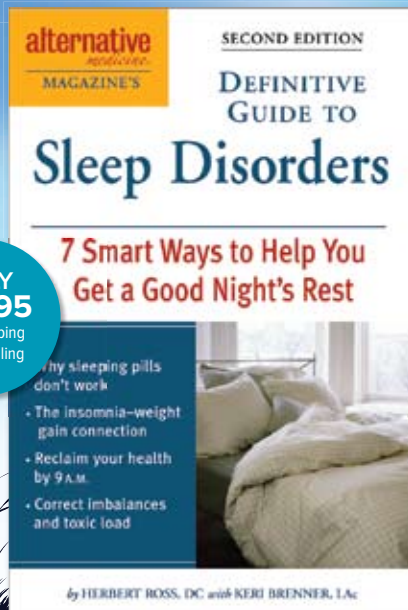
3) may make little or no difference in the level or triglycerides.

We are uncertain of the effect of artichoke extract on the level of LDL cholesterol because the quality of the evidence is very low. None of the studies measured side effects.

### SUMMARY OF FINDINGS

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reviews to a wider audience, the Cochrane CAM Field develops Summary of Findings (SoF) tables (like Table 2) and then uses these tables as a basis for our summaries. In each SoF table, we present the most important outcomes of the review, the effect of the intervention on each outcome, and the quality of the evidence for each outcome. The process of developing the SoF table involves deciding which outcomes to present for which time points and evaluating the strength and quality of the evidence for the outcomes. We contacted the authors of this review to request clarification on any points that are not understood in the Cochrane review and also to request their review of the SoF.

#### Where Does This Information Come From?

The Cochrane Collaboration is an independent global network of volunteers dedicated to summarizing research about health care. This information is taken from this Cochrane Review: Wider B, Pittler MH, Thompson-Coon J, Ernst E. Artichoke leaf extract for treating hypercholesterolaemia. *Cochrane Database Syst Rev*. 2009 Oct 7;(4):CD003335.

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