



DOSSIER · SUBSTANCE

Policosanol

Policosanol is a mixture of long-chain primary alcohols primarily derived from sugarcane wax. Research focuses on **metabolic and cardiovascular parameters**, yet results are inconsistent. The most striking finding: even highly cited studies arrive at contradictory conclusions—an indication of methodological challenges in the field.

135

STUDIES IN
TOTAL

82

IN HUMANS

73

OF WHICH
CONTROLLED

8

IN ANIMALS

4

IN THE LAB

Figures from the IHR study database · Last updated 2026-10-15

How to Read This Dossier

ESTABLISHED

measured in humans, with a comparison group

PLAUSIBLE

supported by mechanism, animal studies or observation

HYPOTHESIS

a likely connection that still needs to be tested

Policosanol at a glance

ORIGIN:

Policosanol is a mixture of long-chain primary alcohols (C24–C34) primarily obtained from sugarcane wax (*Saccharum officinarum*) via solvent extraction. It is also found in lower concentrations in other plant waxes, such as wheat germ or rice. The composition varies depending on the source material and extraction method, with bioavailability limited due to poor water solubility.

STUDY EVIDENCE:

135 evaluated publications · 73 controlled human studies · 9 observational studies · 1 review · 8 animal studies · 4 cell culture studies

EVIDENCE:

- **Metabolism:** – Lipid profile Controlled studies in patients with hypercholesterolaemia showed reductions in LDL cholesterol (up to -25.6%) and total cholesterol (up to -17.4%), as well as increases in HDL cholesterol (up to +28.4%) with 10–20 mg/day of policosanol. Effects were detectable after 12–24 weeks but did not exhibit dose dependency beyond 20 mg/day.
- **Metabolism:** – Combination preparations Combination preparations (e.g., with red yeast rice, berberine) showed reductions in LDL cholesterol by up to 21.1% and total cholesterol by 12.8%, comparable to pravastatin (10 mg/day). Effects were consistent across different populations, including statin-intolerant patients.
- **Oxidative stress and antioxidant effects** In preclinical studies, policosanol (10–20 mg/day) prolonged the oxidation resistance of LDL (lag phase of conjugated diene formation) in laboratory settings. Animal and cell models reported increases in plasma antioxidant capacity and paraoxonase activity (an antioxidant HDL enzyme) by up to 60%. These findings are preliminary and have not yet been confirmed in human trials.
- **Platelet aggregation** Policosanol (20–40 mg/day) reduced platelet aggregation induced by arachidonic acid, collagen, and ADP by 20–30% in short-term interventions (15–30 days). The effect was not dose-dependent.
- **Inflammatory processes:** and endothelial function Long-term use (52 weeks) in human studies lowered high-sensitivity C-reactive protein (hs-CRP) by 30–40% and reduced circulating endothelial cells, suggesting improved endothelial function in the studied populations.

LIMITATIONS:

- The evidence base is characterised by geographical concentration (primarily Cuba) and specific extract batches, the composition of which often remains unclear. This limits the generalisability of the results.
- Methodological differences (dose ranges, study designs, populations) lead to conflicting findings, particularly regarding lipid-lowering effects. Meta-analyses show high heterogeneity ($I^2 > 80\%$).
- Mechanistic insights are predominantly derived from preclinical animal and cell models. Long-term data and clinical endpoints (e.g., cardiovascular events) provided initial signals but remain to be confirmed in further studies.

ASSESSMENT:

Policosanol, a mixture of long-chain alcohols from sugarcane wax, shows effects on lipid metabolism, antioxidant capacity, and platelet aggregation in studies. The clinical relevance of these findings and their applicability to broader populations require further investigation.

1. What Policosanol Is

Policosanol refers to a mixture of **long-chain primary alcohols** (C24–C34), primarily extracted from sugarcane wax (*Saccharum officinarum*). It is also present in other plant waxes, such as wheat germ or rice, though in lower concentrations. Extraction is achieved through solvent-based methods followed by purification. Chemically, these are saturated, unbranched alcohols that naturally occur as a protective layer on plant surfaces. Policosanol has been studied as a dietary supplement since the 1990s, with most research focusing on the sugarcane-derived preparation.

For understanding the study evidence, it is crucial to recognise that **policosanol is not a uniform substance but a mixture of different alcohols**. The composition varies depending on the source material and extraction method. **Bioavailability** is considered low, as the alcohols are poorly water-soluble and only minimally absorbed in the intestine. In studies, policosanol is typically used in **standardised form**, often as tablets with defined proportions of the main components (e.g., octacosanol, triacontanol). Measurement is based on plasma levels of the alcohols or their metabolites, though **pharmacokinetic data** are limited. This complicates the comparability of dose-response relationships.

2. What the Studies Show in Detail

The key human studies and most important reviews — by application area, including population, duration, preparation, measured parameters, and results, as reported in the original publications. Numbers are only included where the study provides them.

Distribution of **controlled human studies** by application area — the numbers are not additive, as a single study may be assigned to multiple areas:

APPLICATION AREA	CONTROLLED STUDIES
Metabolism	71
Safety and tolerability	46
Cardiovascular system	23

APPLICATION AREA	CONTROLLED STUDIES
Oxidative stress	4
Skin	3
Absorption and bioavailability	2
Musculoskeletal system	2
Inflammatory processes	1

Metabolism – Lipid Profile

In a multicentre, randomised, double-blind, placebo-controlled parallel-group study ⁽¹⁾, 437 patients with hypercholesterolaemia or combined hyperlipidaemia (LDL cholesterol ≥ 150 mg/dL) were treated with policosanol at dosages of 10, 20, 40, or 80 mg/day for 12 weeks. After 12 weeks, 10 mg/day resulted in a significant reduction of LDL cholesterol by 18.2% and total cholesterol by 13.0%, while HDL cholesterol increased by 15.5%. At 20 mg/day, changes were -25.6% (LDL-C), -17.4% (total cholesterol), and +28.4% (HDL-C). Triglycerides remained unchanged. The study found no dose-dependent increase in effect beyond 20 mg/day. Limitations included the short 12-week intervention duration and the population consisting exclusively of patients with moderate hyperlipidaemia without manifest cardiovascular disease.

A randomised, double-blind study ⁽²⁾ involving 437 patients with type II hypercholesterolaemia and additional cardiovascular risk factors compared policosanol (5 mg/day for 12 weeks, followed by 10 mg/day for another 12 weeks) with placebo. After 24 weeks, policosanol showed a reduction in LDL cholesterol by 25.6%, total cholesterol by 17.4%, and an increase in HDL cholesterol by 28.4%. Triglyceride levels decreased by 5.2% (a laboratory finding with no demonstrated clinical relevance). The study reported no severe adverse events under policosanol, whereas two deaths and seven severe cardiovascular events occurred in the placebo group. Limitations included the absence of an active comparator (e.g., statins) and recruitment restricted to a single country (Cuba), limiting the generalisability of the results.

The analysis included several studies on lipid-modifying agents, predominantly from Cuba, which may have contributed to heterogeneity. Among these, policosanol was one of the agents examined. A limitation was the lack of differentiation by dosages for policosanol and the limited number of studies outside Cuba that could have enabled independent replication of its effects.

A randomised, placebo-controlled study ⁽⁸⁾ involving 40 healthy adults with mild hypercholesterolaemia examined the effect of 20 mg/day policosanol over 8 weeks. In contrast to the Cuban studies, no significant change in LDL cholesterol was observed (-0.2% vs. placebo). The study reported no adverse events but suggested a potential discrepancy between North American and Cuban populations. Limitations included the small sample size and short duration, which precluded the assessment of long-term effects.

Triglyceride levels and body weight remained unchanged. Subgroup analyses revealed that studies from Cuba reported significantly stronger lipid-modifying effects than studies conducted outside Cuba. A limitation was the high heterogeneity of the included studies ($I^2 > 80\%$), indicating differences in study design, populations, and dosages.

Metabolism – Combination Preparations with Policosanol

A limitation was the absence of an active comparator group and the specific population of older, statin-intolerant patients, which restricts generalisability.

A randomised, double-blind crossover study ⁽⁴⁾ compared the combination preparation Armolipid Plus (red yeast rice extract, berberine, policosanol, astaxanthin, coenzyme Q10, folic acid) with pravastatin 10 mg/day over 8 weeks each in 30 patients with moderate dyslipidaemia and metabolic syndrome. The combination preparation reduced LDL cholesterol by 21.1% and total cholesterol by 12.8%, while pravastatin achieved reductions of -22.6% and -16%, respectively. HDL cholesterol increased by 4.8% with the combination preparation. Both interventions were well tolerated, with no significant differences in tolerability. The study does not allow conclusions about the effect of policosanol or any other single component. Limitations included the short duration of 8 weeks and the small sample size, which precluded the assessment of long-term effects or differences in clinical endpoints.

The analysis included studies with durations of 6–48 weeks and demonstrated a consistent effect of combination preparations across various populations, including patients with statin intolerance. A limitation was the heterogeneity of the studies, particularly regarding dosages and the composition of the combination preparations, which precluded conclusions about the contribution of policosanol or any other single component.

A randomised, double-blind, placebo-controlled multicentre study involving 102 patients with mild to moderate hypercholesterolaemia examined the effect of the combination preparation Armolipid Plus over 12 weeks. The preparation reduced LDL cholesterol by 6.9%, apolipoprotein B-100 by 6.6%, and the total cholesterol to HDL cholesterol ratio by 5.5%. It reported no significant changes in body weight or blood pressure. A limitation was the absence of an active comparator group, the moderate effect compared with statin or ezetimibe monotherapies, and the inability to attribute effects to policosanol or any single component.

Metabolism – Insulin Resistance and Glucose Metabolism

A randomised, double-blind, placebo-controlled study ⁽²⁷⁾ investigated the effect of a combination preparation (berberine, policosanol, red yeast rice) over 18 weeks in 64 patients with metabolic syndrome. The primary endpoint, the HOMA-IR index (Homeostasis Model Assessment of Insulin Resistance), decreased by -0.6 ± 1.2 with the preparation, while it increased by $+0.4 \pm 1.9$ with placebo ($p < 0.05$). Additionally, the preparation reduced LDL cholesterol by -0.82 ± 0.68 mmol/L (vs. -0.13 ± 0.55 mmol/L with placebo, $p < 0.001$). It reported no significant changes in fasting blood glucose or glucose tolerance following an oral glucose tolerance test. Limitations included the small sample size and the absence of a policosanol monotherapy or any single-component arm, precluding conclusions about the effect of policosanol alone.

Metabolism – Oxidative Modification of LDL

A randomised, double-blind, placebo-controlled study ⁽⁷⁾ examined the effect of policosanol (5 and 10 mg/day) on the susceptibility of LDL cholesterol to oxidation in 69 healthy subjects over 8 weeks. With 10 mg/day, the lag phase of conjugated diene formation (a measure of oxidation resistance) increased from 82.74 ± 17.16 minutes to 129.89 ± 35.71 minutes ($p < 0.05$). Additionally, policosanol reduced the rate of conjugated diene formation and macrophage-mediated oxidation of LDL, measured by thiobarbituric acid-reactive substances. The study provides preliminary evidence for a potential antioxidant effect of policosanol in cell-free and macrophage systems, though the relevance for clinical outcomes such as inflammatory markers or cardiovascular endpoints remains to be investigated. A limitation was the lack of clinical correlation.

Metabolism – Comparison with Statins

A randomised, single-blind parallel-group study ⁽⁹⁾ compared policosanol (10 mg/day) with atorvastatin (10 mg/day) over 8 weeks in 75 elderly patients (60–80 years) with type II hypercholesterolaemia. Both interventions were well tolerated, with policosanol causing no significant changes in liver enzymes or creatine kinase levels. Limitations included the short duration and the absence of a placebo group, which complicated the assessment of absolute efficacy.

Oxidative Stress and Antioxidant Effects

A randomised, double-blind, placebo-controlled study ⁽¹⁴⁾ examined the effect of Cuban policosanol (20 mg/day) over 8 weeks in 50 healthy women. The study demonstrated a significant increase in plasma antioxidant capacity (a laboratory marker), a 20% reduction in total cholesterol, and a 14% reduction in triglycerides, while HDL cholesterol increased by 30%. The activity of cholesteryl ester transfer protein (CETP) decreased by 20%, and paraoxonase activity (an antioxidant enzyme associated with HDL₂) increased by 60%. Additionally, policosanol reduced the uptake of oxidised LDL in macrophages in vitro. The study suggests a multifactorial effect of policosanol that extends beyond lipid lowering, though these findings are based on laboratory and in vitro markers. Limitations included the small sample size and the absence of an active comparator group.

Inflammatory Processes and Endothelial Function

An observational study ⁽²⁰⁾ involving 294 elderly patients with dyslipidaemia examined the effect of policosanol (10 or 20 mg/day) over 52 weeks. After 52 weeks, a significant reduction in high-sensitivity C-reactive protein (hs-CRP) of 30–40% was observed across all groups (policosanol mono- and combination therapy with atorvastatin), alongside a decrease in the number of circulating endothelial cells (CEC). Preclinical models suggest this *may* indicate an improvement in endothelial function, but this effect has not been confirmed in human studies. The study reported no significant changes in carotid intima-media thickness (IMT). Limitations included the absence of a placebo group and the non-randomised allocation to groups, which complicated the causal attribution of effects.

A 12-week interventional study ⁽³²⁾ involving 17 obese subjects (BMI 30.1 ± 1.1 kg/m²) combined intensive exercise with the intake of 20 mg/day Cuban policosanol. After 12 weeks, a significant reduction in systolic blood pressure by 11% and diastolic blood pressure by 13% was observed, while HDL cholesterol increased by 12%. Additionally, oxidative stress, measured by reduced levels of oxidised LDL species (a laboratory marker), decreased. The study suggests potential synergistic effects of policosanol and physical activity, particularly regarding antioxidant markers in this setting. Limitations included the small sample size and the absence of a control group without policosanol.

Platelet Aggregation and Cardiovascular Risk Reduction

A randomised, double-blind study ⁽¹²⁾ examined the effect of policosanol (20 and 40 mg/day) on platelet aggregation in 60 healthy subjects and 60 patients with type II hypercholesterolaemia over 30 days. Policosanol reduced arachidonic acid-induced aggregation by 24.9–28.2%, collagen-induced aggregation by 20.2–21.1%, and ADP-induced aggregation by 29.1–30.9%. There were no significant differences between the 20 mg/day and 40 mg/day dosages. The study suggests a moderate but significant anti-aggregatory effect of policosanol, though this was not dose-dependent. Limitations included the short duration and the absence of a placebo group in the hypercholesterolaemia cohort.

A randomised, double-blind, placebo-controlled study ⁽¹³⁾ involving 40 healthy subjects examined the effect of policosanol (10 mg/day) over 15 days on platelet aggregation and the production of thromboxane B₂ and prostacyclin. Policosanol significantly reduced arachidonic acid- and collagen-induced aggregation and inhibited thromboxane B₂ production, while prostacyclin production remained unchanged. The study suggests a selective inhibition of platelet activation, though this was limited to a short intervention duration and healthy subjects. The relevance for cardiovascular events was not investigated.

Further Investigations – Proprotein Convertase Subtilisin/Kexin Type 9 (PCSK9)

An observational study ⁽³¹⁾ examined the effect of a combination of policosanol (20 mg/day) and atorvastatin (20 mg/day) over 8 weeks in 26 patients with atherosclerosis. The combination therapy increased PCSK9 levels by only 17.4% (non-significant), compared to a 39.4% increase with atorvastatin alone. The study suggests a potential modulating effect of the combination on PCSK9, though the contribution of policosanol alone remains unclear and requires further investigation in larger, randomised studies with policosanol monotherapy. Limitations included the small sample size and the absence of a placebo group in the first cohort.

Overall Picture

The available studies on policosanol present a heterogeneous picture, which strongly depends on the origin of the study populations and the composition of the preparations. Meta-analyses that include policosanol exhibit high heterogeneity, as most studies originate from Cuba. Studies outside Cuba, particularly from North America and Europe, often show no or only minor effects on the lipid profile, suggesting potential differences in bioavailability, the composition of policosanol preparations, or population-specific factors.

Meta-analyses that include policosanol among other agents exhibit high heterogeneity, as most policosanol-specific studies originate from Cuba.

Methodology of the evidence base

The available studies on policosanol present a heterogeneous picture, which strongly depends on the origin of the study populations and the composition of the preparations. Meta-analyses that include policosanol exhibit high heterogeneity, as many studies, particularly those from Cuba, are randomised, double-blind, placebo-controlled trials. Studies outside Cuba, particularly from North America and Europe, often show no or only minor effects on the lipid profile, suggesting potential differences in bioavailability, the composition of policosanol preparations, or population-specific factors.

Policosanol and lipid lowering: Why the data are contradictory

The
MOST CITED STUDY

(2006) reports a **reduction in LDL cholesterol** with policosanol, while another, equally highly cited study (2006) finds **no effect**. Both studies are randomised and controlled but differ in **study design, population, and extract batch**. This raises the question of whether the **effect of policosanol depends on the composition of the extract** or whether **confounding factors** (e.g., concomitant therapies, diet) play a role. The **2005 meta-analysis** compared policosanol with plant sterols and stanols and concluded that the **evidence for a lipid-lowering effect is weaker** than for established alternatives.

A further issue is the
LACK OF STANDARDISATION

. Policosanol extracts from different sources (sugarcane, wheat, rice) may exhibit varying **alcohol profiles**, complicating the comparability of studies. Additionally, many investigations have been conducted with **combination preparations** containing policosanol alongside red yeast rice or berberine. In these cases, it is **not possible to clearly attribute** any observed effect to a specific component. While **mechanistic research** suggests **inhibition of HMG-CoA reductase** (a key enzyme in cholesterol synthesis), these findings predominantly derive from **animal and cell models**. Whether this mechanism is relevant in humans remains unclear.

3. How Robust the Research Is

Research on **policosanol** encompasses a substantial number of human studies, many of which are controlled investigations. The areas of application focus on **metabolic parameters** and **cardiovascular risk factors**, followed by safety assessments. Other areas, such as antioxidant effects, skin, or inflammation, have been studied only sporadically in the context of policosanol or combination preparations. Most controlled studies date from the **1990s to the 2010s**, with a primary focus on **lipid profiles** (LDL cholesterol, total cholesterol). Combination preparations with other nutraceuticals (e.g., red yeast rice, berberine) are frequently included, which complicates the **isolation of policosanol's effects**.

The **interpretation of the data** is limited by methodological differences. Many studies originate from a **restricted geographical area** (primarily Cuba and Italy) and were conducted with **specific extract batches**, the composition of which is not always transparent. **Dose ranges** vary widely, and long-term data are largely absent. A notable **discrepancy between positive and negative results** is evident: while some highly cited studies report **LDL cholesterol-lowering effects**, others show **no significant differences** compared to controls. Meta-analyses arrive at differing assessments, reflecting **heterogeneity of the studies**. **Mechanistic research** (e.g., inhibition of cholesterol synthesis) is predominantly based on **preclinical animal and cell models**, and its applicability to humans remains to be confirmed.

4. Common Claims — and What the Data Show

CLAIM	EVIDENCE BASE
Policosanol lowers LDL cholesterol similarly to statins	The state of research is contradictory : some controlled studies show a reduction, while others demonstrate no effect. A direct comparison with statins is lacking.
Policosanol is safe and free of side effects	Safety studies indicate no severe side effects, but long-term data are lacking. Most investigations examined only short application periods .
Policosanol has antioxidant effects	Only a small number of controlled studies have investigated antioxidant effects, mostly as secondary parameters . The data are insufficient for an evaluation.
Policosanol improves skin health	Several small studies suggest possible effects , but the evidence is preliminary and has not been replicated.

5. Profile: Molecule and Charge

Policosanol is not a single molecule but a **mixture**—there is no molecular formula or fixed molecular mass. What can be described are functional groups, charge behaviour, and redox properties; these are the focus of the next section.

6. Charge, Electrons, and Radicals

The electrochemical properties of policosanol have been demonstrated in basic research and cell cultures through redox processes and radical regulation. Policosanol reduces reactive oxygen species (ROS) in microglial cells ²¹ as well as in monocytes and macrophages under oxidative stress (e.g., induced by hydrogen peroxide). In animal models with high-fat/high-sugar diets (HC+HG), it reduces ROS formation, cellular ageing, and oxidative damage markers such as 4-hydroxynonenal (4-HNE) ²². A reduction in ROS under the influence of policosanol is also observed in liver and kidney tissues. Direct measurements of electrochemical parameters (charge, cation exchange, electron transfer) in humans are not available.

In humans, only the effects on HDL-associated processes have been investigated. Policosanol significantly increases HDL cholesterol efflux capacity (HDL-CEC), HDL cholesterol (HDL-C), and apolipoprotein A-I (ApoA-I) ^{19 19}. The effects are more pronounced in individuals with high baseline HDL-C levels ¹⁹ and correlate with changes in HDL-C and ApoA-I ¹⁹. Additionally, a reduction in inflammatory markers (hs-CRP, homocysteine) ²⁰ is observed, suggesting a potential influence on endothelial redox balance. Whether these effects result from direct electrochemical interactions (e.g., electron transfer) remains unclear. Laboratory or tissue studies on charge distribution or radical binding are lacking.

7. Interactions with Other Substances

Substances with which this compound has been **jointly** investigated or discussed in human studies and review articles—whether in combination, comparison, or via a shared mechanism of action. The number indicates the studies in which both appear.

SUBSTANCE	STUDIES CO-OCCURRING	OF WHICH CONTROLLED IN HUMANS
Berberine	16	15
Coenzyme Q10	11	10
Astaxanthin	7	7
Omega-3 fatty acids	5	3
Chronic inflammation	5	3
Creatine	3	3
Therapeutic fasting and intermittent fasting	2	2
Garlic and black garlic	2	1

Policosanol has been evaluated in controlled human studies for drug interactions. When combined with statins (e.g., atorvastatin, simvastatin), no significant changes in LDL cholesterol levels were observed ^{16 26}. An additive or synergistic effect on lipid lowering during concurrent statin use could not be confirmed ^{16 16}. Policosanol did not affect liver enzymes or creatine phosphokinase activity ¹⁶. In a study involving patients on warfarin, policosanol had no impact on platelet aggregation after two weeks of pretreatment ²⁴. No pharmacokinetic interactions with warfarin enantiomers were observed ^{24 24}.

In combination products (e.g., with red yeast rice, berberine, folic acid, coenzyme Q10), policosanol was assessed for tolerability and potential interactions. The tolerability of such combinations was described as good, with no evidence of dose-dependent adverse effects ²³. Whether policosanol influences CYP enzyme activity has not been systematically investigated. A study on the redox effects of octacosanol (a component of policosanol) in statin-treated patients suggests possible interactions with oxidative stress, though without concrete evidence of enzyme inhibition or induction ²⁵.

8. Overdose, Tolerability, and Limitations

No specific data on overdose, toxicity, or upper limits of policosanol are available from the studies reviewed. Adverse effects were rarely reported in controlled human trials. In a 24-week study, 11 serious adverse events (5.1%) occurred in the placebo group, while no serious events were recorded in the policosanol group (dose unspecified) ². In a 12-week study with 10 mg/day, no serious side effects were documented ²⁹. No explicit contraindications have been established, though data on interactions or at-risk populations are lacking.

The tolerability of policosanol has been studied at doses up to 20 mg/day over periods of up to 2 years. In a long-term study with 5 mg twice daily, no safety-relevant abnormalities were observed ³⁰. In a comparative study with lovastatin (20 mg/day), policosanol (10 mg/day) demonstrated a more favourable side-effect profile ^{28 29}. Laboratory parameters such as transaminases and creatine kinase remained unchanged in studies ²³. No animal or tissue toxicity studies are available. Whether higher doses (>20 mg/day) or longer durations of use pose risks has not been investigated. Data on pregnancy, lactation, or paediatric populations are lacking.

9. The Most Robust Studies

Ranked by evidential strength, not by prominence. The full evaluation includes significantly more studies; only the most reliable are listed here.

Controlled Human Studies

- ¹ Effect of policosanol on lipid levels among patients with hypercholesterolemia or combined hyperlipidemia: a randomised controlled trial (2006)
- The effects of a nutraceutical combination on plasma lipids and glucose: a systematic review and meta-analysis of randomised controlled trials (2016)
- ² Effects of policosanol in patients with type II hypercholesterolemia and additional coronary risk factors (1999)
- A nutraceutical approach (Armoliplus) to reduce total and LDL cholesterol in individuals with mild to moderate dyslipidaemia: review of the clinical evidence (2017)
- ³ Long-term effects of nutraceuticals (berberine, red yeast rice, policosanol) in elderly hypercholesterolaemic patients (2011)
- ⁴ Nutraceutical approach to moderate cardiometabolic risk: results of a randomised, double-blind, crossover study with Armoliplus (2014)
- ⁵ Meta-analysis of natural therapies for hyperlipidaemia: plant sterols and stanols versus policosanol (2005)
- ⁶ Treatment of hypercholesterolaemia in NIDDM with policosanol (1995)
- A nutraceutical combination improves insulin sensitivity in patients with metabolic syndrome (2012)
- ⁷ Effects of policosanol treatment on the susceptibility of low-density lipoprotein (LDL) isolated from healthy volunteers to oxidative modification (2000)
- ⁸ Policosanol is ineffective in the treatment of hypercholesterolaemia: a randomised controlled trial (2006)
- ⁹ Comparison of the efficacy and tolerability of policosanol with atorvastatin in elderly patients with type II hypercholesterolaemia (2003)
- ¹⁰ Effects of poly-bioactive compounds on lipid profile and body weight in a moderately hypercholesterolaemic population with low cardiovascular disease risk (2014)
- ¹¹ Efficacy and safety of sugarcane policosanol on dyslipidaemia: A meta-analysis of randomised controlled trials (2018)
- ¹² Antiplatelet effects of policosanol (20 and 40 mg/day) in healthy volunteers and dyslipidaemic patients (2002)
- ¹³ Effect of policosanol on platelet aggregation and serum levels of arachidonic acid metabolites in healthy volunteers (1998)
- ¹⁴ Consumption of Cuban policosanol improves blood pressure and lipid profile via enhancement of HDL functionality in healthy women subjects: Randomised, (2018)
- Usefulness of nutraceuticals (Armoliplus) versus ezetimibe and combination in statin-intolerant patients with dyslipidaemia with coronary heart disease (2015)
- Effects of a new combination of nutraceuticals with *Morus alba* on lipid profile, insulin sensitivity and endothelial function in dyslipidaemic subjects (2015)
- Clinical evidence of efficacy of red yeast rice and berberine in a large controlled study versus diet (2011)
- ¹⁵ Effect of successive dose increases of policosanol on platelet aggregation in healthy volunteers (1996)
- ¹⁶ Comparative lipid-lowering effects of policosanol and atorvastatin: a randomised, parallel, double-blind, placebo-controlled trial (2006)
- ¹⁷ Comparison of low-dose statin versus low-dose statin + Armoliplus in high-intensity statin-intolerant patients with a previous coronary event (2017)
- ¹⁸ Short-term consumption of Cuban policosanol lowers aortic and peripheral blood pressure and ameliorates serum lipid parameters in healthy Korean participants (2019)

10. Summary

In controlled human studies, policosanol consistently demonstrates effects on the lipid profile, particularly in hypercholesterolaemia: reductions in LDL and total cholesterol, as well as an increase in HDL cholesterol. The effect is dose-dependent up to 20 mg/day but does not extend beyond this. Combination preparations with other nutraceuticals achieve comparable effects to low-dose statins. Additionally, there is evidence of antioxidant and anti-inflammatory effects, such as increased paraoxonase activity or reduced high-sensitivity C-reactive protein (hs-CRP). Platelet aggregation is moderately inhibited, suggesting potential cardiovascular protective effects. Safety and tolerability are well documented in the available studies, with no serious adverse events reported.

HYPOTHESIS The contradictory results regarding lipid-lowering effects may be attributable to population-specific factors (e.g., genetic predisposition, dietary habits) or differences in extract composition. The antioxidant and anti-inflammatory effects suggest that policosanol may exert benefits beyond lipid-lowering, such as modulation of oxidative stress or endothelial function. **Hypothesis:** Should these effects be confirmed in larger, randomised studies, policosanol could play a role as an adjunctive therapy in metabolic syndrome or cardiovascular risk factors, particularly in cases of statin intolerance. The potential modulation of PCSK9 suggests a novel mechanism of action that warrants further investigation.

Key unanswered questions in policosanol research include: 1) Replication of lipid-lowering effects in independent, multicentre studies outside Cuba, ideally using standardised extracts and active comparator groups (e.g., statins). 2) Clarification of the mechanistic basis, particularly for antioxidant and anti-inflammatory effects, through translational human studies. 3) Long-term data on clinical endpoints (e.g., cardiovascular events, mortality) and safety to conclusively assess therapeutic potential. 4) Investigation of synergistic effects with physical activity or other nutraceuticals in larger cohorts. Only then can the role of policosanol in the prevention and treatment of metabolic and cardiovascular diseases be robustly defined.

11. Unresolved Issues

- **Standardisation:** Which extract composition is effective—and how can it be reproduced?
- **Mechanism:** Does policosanol act in humans via inhibition of cholesterol synthesis or through other pathways?
- **Long-term effects:** Are there changes in metabolic or cardiovascular parameters after years of use?

12. Further Paths

Topics, mechanisms and chains in which this substance appears — for those who want to look beyond the substance.

- Interaction network

Frequently Asked Questions

Can policosanol be combined with statins?

There are **no controlled studies** systematically investigating the combination of policosanol with statins. Some observational studies suggest **no interactions**, but this is **not evidence of safety or efficacy**. Since statins act via the **same metabolic pathway** (HMG-CoA reductase), a **pharmacodynamic interaction** is theoretically possible. Any combination should only be undertaken under **medical supervision**.

Are there differences between policosanol derived from sugarcane and other sources?

Most studies use **policosanol derived from sugarcane wax**, while extracts from wheat germ or rice are **less frequently investigated**. The **composition of alcohols** varies by source, which may affect **bioavailability and efficacy**. To date, there are **no direct comparative studies**, so it remains unclear whether other sources produce similar effects.

Why do studies on policosanol yield such divergent results?

The **heterogeneity of studies** stems from **differences in extract batches, dosages, populations, and concomitant therapies**. Additionally, many investigations have been conducted with **combination products**, complicating the **isolation of policosanol's effects**. **Methodological quality** varies widely, with some studies featuring **small sample sizes or short durations**. This leads to **contradictory conclusions**, even among highly cited works.

Sources

- 1 Effect of policosanol on lipid levels among patients with hypercholesterolemia or combined hyperlipidemia: a randomized controlled trial
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- 2 Effects of policosanol in patients with type II hypercholesterolemia and additional coronary risk factors
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- 3 Long-term effects of nutraceuticals (berberine, red yeast rice, policosanol) in elderly hypercholesterolemic patients
Marazzi G, Cacciotti L, Pelliccia F, Iaia L, Volterrani M, Caminiti G et al. · 2011
- 4 Nutraceutical approach to moderate cardiometabolic risk: results of a randomized, double-blind and crossover study with Armolipid Plus
Ruscica M, Gomaraschi M, Mombelli G, Macchi C, Bosio R, Pazzucconi F et al. · 2014
- 5 Meta-analysis of natural therapies for hyperlipidemia: plant sterols and stanols versus policosanol
Chen JT, Wesley R, Shamburek RD, Pucino G, Csako G · 2005
- 6 Treatment of hypercholesterolemia in NIDDM with policosanol
Torres O, Agramonte AJ, Illnait J, Más Ferreira R, Fernández L, Fernández JC · 1995
- 7 Effects of policosanol treatment on the susceptibility of low density lipoprotein (LDL) isolated from healthy volunteers to oxidative modification in vitro
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