

# Effects of Cuban Sugarcane-Derived Policosanol on Lipid Profiles in Healthy Individuals with Normal LDL Cholesterol Levels: A Systematic Review and Meta-Analysis

Taiki Yamamoto<sup>1</sup>, Bo Zhang<sup>2,3</sup>, Tomohiro Komatsu<sup>4,5</sup>, Shin'ichiro Yasunaga<sup>2</sup>, Yoshinari Uehara<sup>1,4,5,6\*</sup>

<sup>1</sup>Graduate School of Sports and Health Science, Fukuoka University, Fukuoka, Japan; <sup>2</sup>Department of Biochemistry, Fukuoka University School of Medicine, Fukuoka, Japan; <sup>3</sup>Information Technology Center, Fukuoka University, Fukuoka, Japan; <sup>4</sup>Center for Preventive, Anti-aging and Regenerative Medicine, Fukuoka University Hospital, Fukuoka, Japan; <sup>5</sup>Institute for Physical Activity, Fukuoka University, Fukuoka, Japan; <sup>6</sup>Department of Cardiology, Fukuoka University Hospital, Fukuoka, Japan

PRISMA 2020 Checklist			
Section and Topic	Item #	Checklist Item	Location where item is reported
<b>TITLE</b>			
Title	1	Identify the report as a systematic review.	1
<b>ABSTRACT</b>			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	4, 5
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	5, 6
<b>METHODS</b>			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	6, 7
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	7
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	7
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	7
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	7
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	8
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	9
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	8
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	9
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing them against the planned groups for each synthesis (item #8)).	9
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversion.	9
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	9, 10
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	9, 10
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	9, 10
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	9, 10
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	9, 10
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	10
<b>RESULTS</b>			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	11, Fig1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	11
Study characteristics	17	Cite each included study and present its characteristics.	11, 12
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	12, Fig 2
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	13 - 15
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	13
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	13 - 15
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	13 - 15
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	13 - 15
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	13
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	13 - 15
<b>DISCUSSION</b>			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	17
	23b	Discuss any limitations of the evidence included in the review.	19, 20
	23c	Discuss any limitations of the review processes used.	19, 20
	23d	Discuss implications of the results for practice, policy, and future research.	20
<b>OTHER INFORMATION</b>			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	18
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	18
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	18
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	20, 21
Competing interests	26	Declare any competing interests of review authors.	20, 21
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	21

Supplementary Figure 1: Checklist of PRISMA 2020.

**Correspondence to:** Yoshinari Uehara, Graduate School of Sports and Health Science, Fukuoka University, Fukuoka, Japan, E-mail: ueharay@fukuoka-u.ac.jp

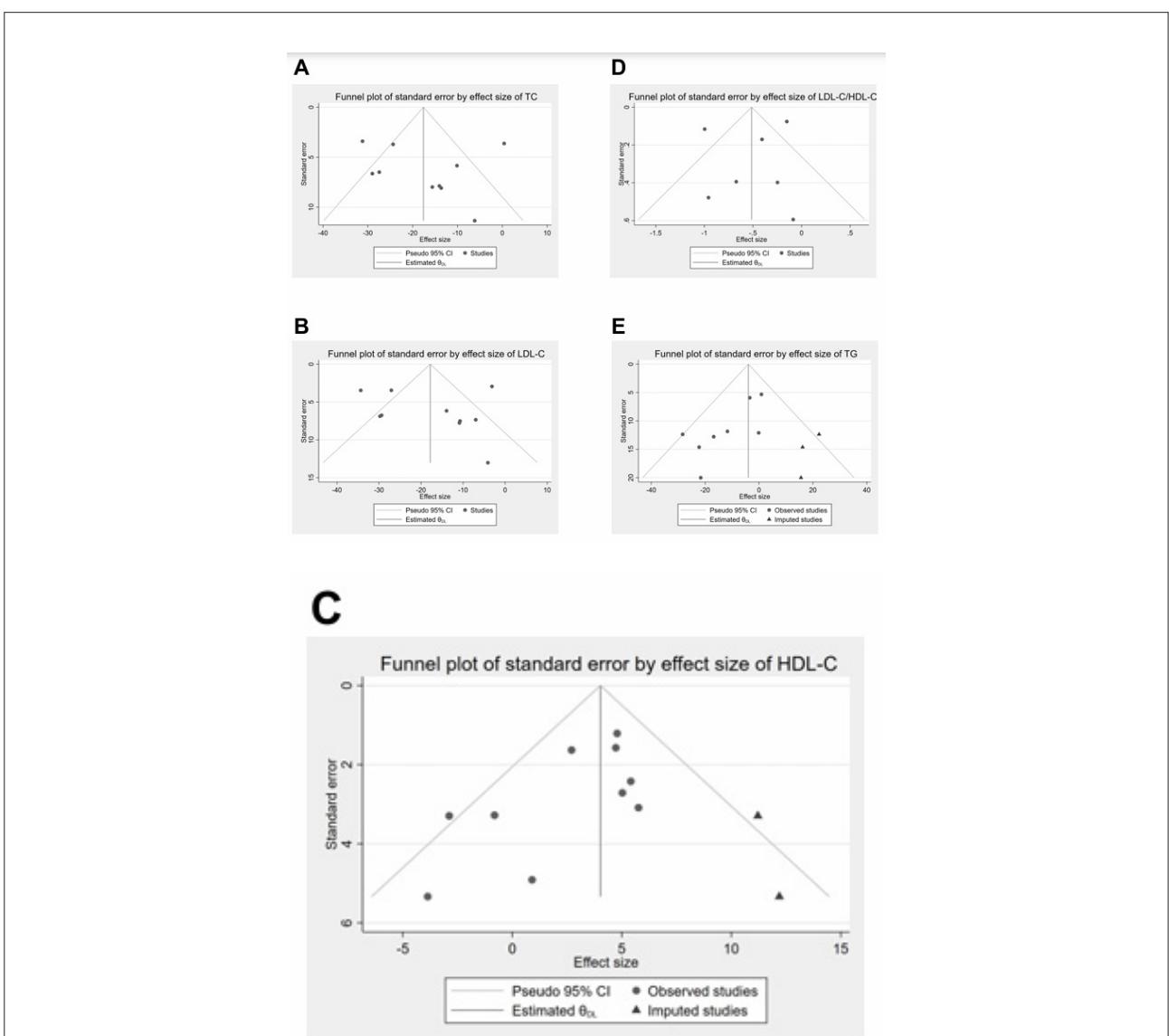
**Received:** 01-Dec-2025, Manuscript No. JCTR-25-39604; **Editor assigned:** 03-Dec-2025, PreQC No. JCTR-25-39604 (PQ); **Reviewed:** 17-Dec-2025, QC No. JCTR-25-39604; **Revised:** 24-Dec-2025, Manuscript No. JCTR-25-39604 (R); **Published:** 31-Dec-2025, DOI: 10.35248/2167-0870.25.15.622

**Citation:** Yamamoto T, Zhang B, Komatsu T, Yasunaga S, Uehara Y (2025). Effects of Cuban Sugarcane-Derived Policosanol on Lipid Profiles in Healthy Individuals with Normal LDL Cholesterol Levels: A Systematic Review and Meta-Analysis. *J Clin Trials*. 15:622.

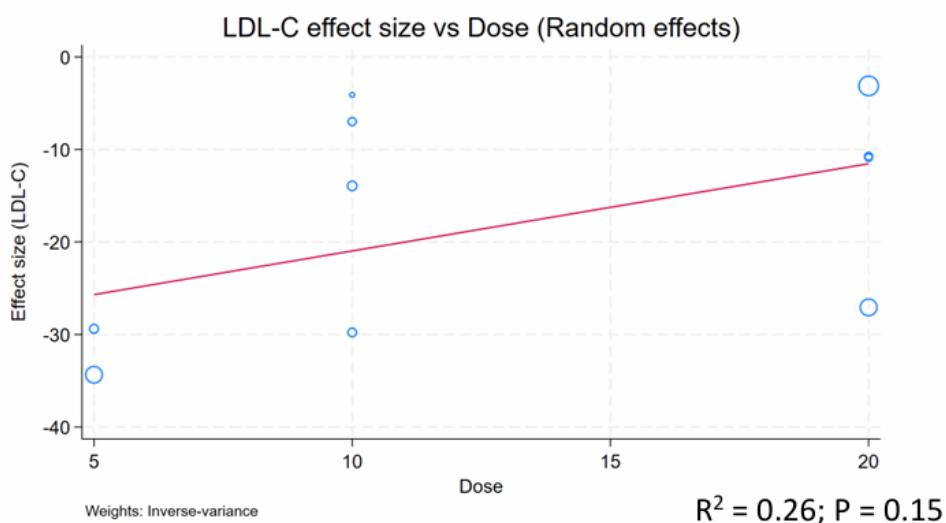
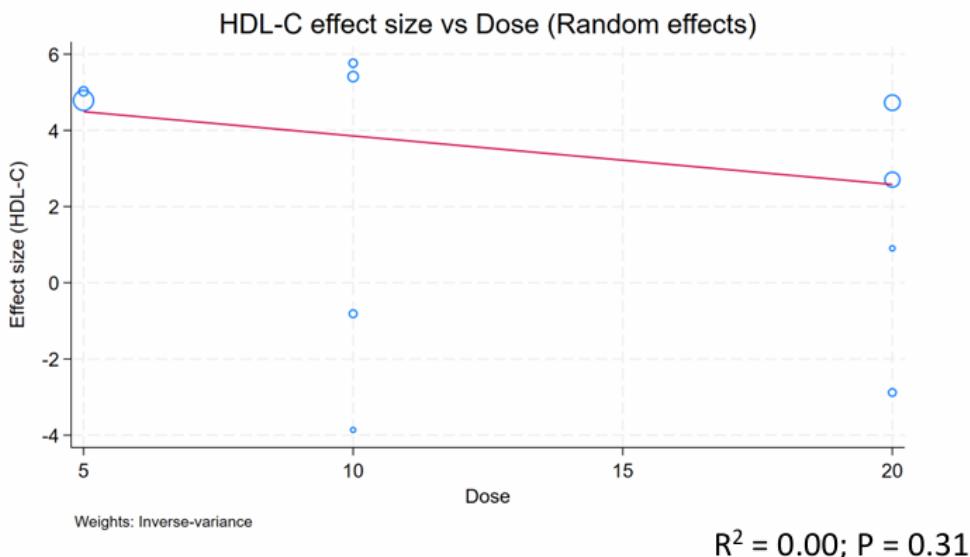
**Copyright:** © 2025 Yamamoto T, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Unique ID	D1	D2	D3	D4	D5	Overall	
Hernandez et al., 1992	-	+	+	+	!	-	 Low risk
Menendez, et al 2000	+	+	+	+	+	+	 Some concerns
Castano et al., 2003	+	+	+	+	+	+	 High risk
Lopez et al., 2010	!	!	+	+	!	!	 Some concerns
Kim et al., 2018	+	!	!	+	!	!	 Some concerns
Uehara et al., 2024	+	+	+	+	+	+	 Low risk
Revuetas et al., 2025	+	+	+	+	+	+	 Low risk

**Supplementary Figure 2:** Risk of bias assessment for the included randomized controlled trials using the Cochrane RoB 2 tool. Note: D1) Randomization process; D2) Deviations from the intended interventions; D3) Missing outcome data; D4) Outcome measurement; D5) Selection of the reported result.



**Supplementary Figure 3:** Funnel plot displaying publication bias in the studies reporting the impact of policosanol on A) total cholesterol (TC); B) low-density lipoprotein cholesterol (LDL-C); C) high-density lipoprotein cholesterol (HDL-C); D) LDL-C/HDL-C ratio; E) triglyceride (TG).

**A****B**

**Supplementary Figure 4:** Random-effects meta-regression analyses of the dose dependency of policosanol. Note: Dose-dependent analyses of low-density lipoprotein cholesterol (LDL-C) (A) and HDL-C (B) levels were performed via a random-effects meta-regression analysis.

**Supplementary Table 1:** Search terms.

1	Policosanol	policosanol OR "long-chain aliphatic alcohols" OR "sugarcane wax alcohols" OR octacosanol OR triacontanol
2	RCTs	intervention OR "trial" OR "randomized" OR "randomised" OR "randomly" OR "RCT" OR "clinical trial" OR "supplementation" OR "placebo" OR "intake" OR "administration"
3	Lipids outcome	"low density lipoprotein" OR "low-density lipoprotein" OR "LDL" OR "high density lipoprotein" OR "high-density lipoprotein" OR "HDL" OR "triglycerides" OR "triglycerides" OR "TG" OR "total cholesterol" OR "TC" OR "lipid" OR "lipids" OR "lipid profile" OR "lipids profile" OR "cholesterol ratio"