



REVIEWER'S REPORT

Manuscript No.: IJAR-50366

Date: 24-02-2025

Title: IN-VIVO AND IN-VITRO ANTI-INFLAMMATORY AND ANTI-ARTHRITIC ACTIVITY OF SYNTHETIC CIS-9 AND CIS-10 CETYL MYRISTOLEATE (CMO) ISOMERS IN MICE.

Recommendation:

- Accept as it is.....**YES**.....
- Accept after minor revision.....
- Accept after major revision
- Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality	√			
Techn. Quality		√		
Clarity		√		
Significance			√	

Reviewer's Name: Dr Aamina

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)

Reviewer's Comment / Report

The study titled "In-Vivo and In-Vitro Anti-Inflammatory and Anti-Arthritic Activity of Synthetic Cis-9 and Cis-10 Cetyl Myristoleate (CMO) Isomers in Mice" presents a comprehensive investigation into the potential therapeutic applications of synthetic CMO isomers. The research is meticulously designed and provides valuable insights into the anti-inflammatory and anti-arthritic properties of these compounds.

Strengths of the Study

1. Scientific Relevance and Significance

- The study addresses an important medical concern—arthritis—by exploring alternative therapeutic agents with potential benefits over conventional NSAIDs.

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- It builds upon existing knowledge regarding CMO and extends the investigation to synthetic cis-9 and cis-10 isomers, which is a novel approach in this field.
2. **Well-Structured Abstract**
 - The abstract succinctly summarizes the background, methodology, and key findings.
 - The mention of both in-vitro and in-vivo models strengthens the study's translational relevance.
 3. **Comprehensive Introduction**
 - The introduction provides a well-rounded discussion of arthritis, the limitations of current treatments, and the growing interest in nutraceuticals like CMO.
 - It effectively highlights the role of fatty acids in inflammation pathways and explains the rationale for studying synthetic CMO.
 4. **Robust Methodology**
 - The methodology is detailed and includes a systematic approach to synthesis, in-vitro and in-vivo testing, and cytokine expression analysis.
 - The choice of experimental models, including RAW264.7 macrophages and DMM surgery-induced osteoarthritis in mice, is appropriate for assessing anti-inflammatory and anti-arthritic effects.
 5. **Strong Experimental Foundation**
 - The study utilizes well-established biochemical assays and ELISA kits to assess inflammatory markers such as TNF α , IL-6, nitric oxide, prostaglandin E2, and leukotriene B4.
 - The detailed list of materials and reagents ensures reproducibility and credibility of the study.
 6. **Market and Economic Considerations**
 - The discussion on the global market for cetyl myristoleate and its projected growth provides valuable industrial and economic context.
 - The study acknowledges the challenges of sourcing pure cis-9 MA, which strengthens the case for synthetic alternatives.
 7. **Well-Supported Discussion**
 - The discussion integrates findings from previous studies and positions the current research within the broader scientific landscape.
 - The differentiation between joint lubrication and inflammation reduction mechanisms is well-articulated.

Final Remarks

This research presents a well-structured and scientifically rigorous examination of synthetic CMO isomers in the context of inflammation and arthritis. The study's combination of in-vitro and in-vivo models, along with its detailed analysis of inflammatory cytokines, makes a significant contribution to the field. The findings reinforce the potential of synthetic CMO as a promising alternative to conventional NSAIDs, offering a sustainable and potentially safer option for managing osteoarthritis and related inflammatory conditions.

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