

INPLASY

Efficacy and Safety of Vitamin C Across All Routes of Administration in Treating Melasma: A Systematic Review and Meta-Analysis

INPLASY202490022

doi: 10.37766/inplasy2024.9.0022

Received: 5 September 2024

Published: 6 September 2024

Varothai, S; Limtanakool, P; Kositamongkol, C; Angkoolpakdeekul, N; Eimpunth, S.

Corresponding author:

Sasima Eimpunth

doctorsasima@gmail.com

Author Affiliation:

Department of Dermatology, Faculty of Medicine, Siriraj Hospital.

ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Formal screening of search results against eligibility criteria.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202490022

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 6 September 2024 and was last updated on 6 September 2024.

INTRODUCTION

Review question / Objective Participant/ population: patients of all ages with melasma. Intervention(s), exposure(s): vitamin C treatment of any routes. Comparator(s)/ control: compare with before treatment. Outcome: melasma improvement: Melasma Area and Severity Index and its variation, Side effects.

Rationale Effective management of melasma remains challenging, as patients often experience incomplete clinical resolution and high rates of recurrence. In the past, a systematic review on efficacy of topical vitamin C in melasma and photoaging was done which shown its efficacy of topical route of application. However, the literature lacks an evaluation of efficacy and safety of all routes of vitamin C in treating melasma. Our systematic review and meta-analysis aimed to address this gap by synthesizing high-level evidence on the efficacy and safety of vitamin C as a treatment of melasma.

Condition being studied Melasma is an acquired hypermelanosis characterized by light to dark-brown symmetric macules with irregular borders occurring on the face. It disproportionately affects women of darker skin phototypes. Melasma has a high prevalence in general population, ranging from 1.5% to as much as 33%.

METHODS

Search strategy The systematic searches were performed on three electronic interfaces including Scopus, EMBASE and PubMed. The searched keywords were “melasma” OR “chloasma” AND “vitamin C” OR “ascorbic acid” OR “ascorbate” OR “ascorbyl” OR “hybrin” OR “magnorbin” OR “ascorbicum”.

Participant or population Patients of all ages with melasma.

Intervention Vitamin C treatment of any routes of administration.

Comparator Comparing before treatment.

Study designs to be included RCT, Randomized split face study, comparative, prospective and observational studies.

Eligibility criteria – Inclusion criteria: study design stated above of any languages with full-text
– Exclusion criteria: study without full-text, case reports, case series.

Information sources Scopus, EMBASE and PubMed.

Main outcome(s) – Improvement in Melasma Area and Severity Index (MASI) or its variation
– Adverse events or side effects.

Additional outcome(s) – Physician and patient assessment.

Data management – Data were extracted into Microsoft Excel
– The analyses were performed on the Stata Statistical Software: Release 16 (StataCorp LP, College Station, TX, United States).

Quality assessment / Risk of bias analysis – RCTs: RoB2 tool
– Non-randomized studies: ROBINS-I tool.

Strategy of data synthesis A meta-analysis will be done when at least two studies reported the same outcome. A random-effects model will be used.

Subgroup analysis Subgroup analyses will be conducted based on duration of treatment, routes of administration, and treatment regimen.

Sensitivity analysis None.

Language restriction No.

Country(ies) involved Thailand.

Keywords Melasma; Vitamin C; Ascorbic acid.

Contributions of each author

Author 1 - Supenya Varothai - Study conception and design, analysis and interpretation of results, manuscript preparation.
Email: supenya.var@gmail.com

Author 2 - Pichanee Limtanakool - Data collection, analysis and interpretation of results, manuscript preparation.

Email: pichanee.cha@gmail.com

Author 3 - Chayanis Kositamongkol - Statistical expertise, analysis and interpretation of results, risk of bias assessment strategy, manuscript preparation.

Email: chayanis.kos@mahidol.edu

Author 4 - Nattha Angkoolpakdeekul - Data collection, manuscript preparation.

Email: nattha.ang08@gmail.com

Author 5 - Sasima Eimpunth - Study conception and design, analysis and interpretation of results, manuscript approval.

Email: doctorsasima@gmail.com