INPLASY PROTOCOL

To cite: Hsieh et al. Treatments effect of Oral Alpha lipoic acid on DM polyneuropathy: a meta-analysis and systemic review. Inplasy protocol 202340109. doi: 10.37766/inplasy2023.4.0109

Received: 29 April 2023

Published: 29 April 2023

Corresponding author:
Ruey-Yu Hsieh

cythereahsieh@gmail.com

Author Affiliation:
Department of Neurology, Taipei Municipal Wan Fang Hospital, Taipei Medical University.

Support: **No.**

Review Stage at time of this submission: **Completed but not published.**

Conflicts of interest:
None declared.

Treatments effect of Oral Alpha lipoic acid on DM polyneuropathy: a meta-analysis and systemic review

Hsieh, RY[1]; Huang, IC[2]; Sung, JY[3].

Review question / Objective: **P: patients with diabetic sensorimotor polyneuropathy (DSPN); I: oral alpha lipoic acid (ALA): 600mg/day, 1200mg/day, 1800mg/day; C: control group; O: Total symptoms score, Neurological disability score, Neuropathy impaired score, Vibration perception thresholds, nerve conduction study, Global satisfaction score.**
Study designs to be included: **1) RCT study design, (2) adult patients with a primary diagnosis of diabetic sensorimotor polyneuropathy, (3) patients had exposure to oral ALA, and (4) trials with outcomes including total symptoms score (TSS), neuropathy impaired score (NIS), neuropathy impaired score-lower limb (NIS-LL), neurological disability score (NDS), visual analog scale of pain (VAS), vibration perception thresholds (VPT), nerve conduction study (NCS), and global satisfaction score.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 April 2023 and was last updated on 29 April 2023 (registration number INPLASY202340109).

INTRODUCTION

Review question / Objective: **P: patients with diabetic sensorimotor polyneuropathy (DSPN); I: oral alpha lipoic acid (ALA): 600mg/day, 1200mg/day, 1800mg/day; C: control group; O: Total symptoms score, Neurological disability score, Neuropathy impaired score, Vibration perception thresholds, nerve conduction study, Global satisfaction score.**

Rationale: **Current disease-modified treatment for DSPN is limited. Considering mechanism of DSPN, ALA is potential treatment choice due to its anti-oxidative**

effect. Previous study in 2012 found that IV form of ALA had favorable effect on total symptoms score but failed in oral form. Decade passed, with more and more RCTs came out, this study aimed to understand that if oral ALA had favorable effects on patients with DM polyneuropathy.

Condition being studied: A meta-analysis of using oral form of ALA to treat those patients suffering from diabetic sensorimotor polyneuropathy (such as pain, numbness, tingling sensation, paresthesia).

METHODS

Search strategy: PubMed, EMBASE, and Cochrane databases
("polyneuropathies"[MeSH Terms] OR "polyneuropathies"[All Fields] OR "polyneuropathy"[All Fields]) AND ("diabete"[All Fields] OR "diabetes mellitus"[MeSH Terms] OR ("diabetes"[All Fields] AND "mellitus"[All Fields]) OR "diabetes mellitus"[All Fields] OR "diabetes"[All Fields] OR "diabetes insipidus"[MeSH Terms] OR ("diabetes"[All Fields] AND "insipidus"[All Fields]) OR "diabetes insipidus"[All Fields] OR "diabetic"[All Fields] OR "diabetics"[All Fields] OR "diabets"[All Fields]) AND ("thioctic acid"[MeSH Terms] OR ("thioctic"[All Fields] AND "acid"[All Fields]) OR "thioctic acid"[All Fields] OR ("lipoic"[All Fields] AND "acid"[All Fields]) OR "lipoic acid"[All Fields]).

Participant or population: Patients with diabetic sensorimotor polyneuropathy.

Intervention: Oral alpha lipoic acid (ALA): 600mg/day, 1200mg/day, 1800mg/day.

Comparator: Control group.

Study designs to be included: 1) RCT study design, (2) adult patients with a primary diagnosis of diabetic sensorimotor polyneuropathy, (3) patients had exposure to oral ALA, and (4) trials with outcomes including total symptoms score (TSS), neuropathy impaired score (NIS), neuropathy impaired score-lower limb (NIS-LL), neurological disability score (NDS), visual analog scale of pain (VAS), vibration perception thresholds (VPT), nerve conduction study (NCS), and global satisfaction score.

Eligibility criteria: Excluded if (1) no data of interest was included, (2) were administered ALA intravenously, (3) the patients took other supplement such as methylcobalamin or γ-linolenic acid simultaneously, (4) were abstracts, reviews, letters, or case reports, (5) were not designed as RCT.

Information sources: PubMed, EMBASE, and Cochrane databases.

Main outcome(s): Total symptoms score.

Additional outcome(s): Neurological disability score, Neuropathy impaired score, Vibration perception thresholds, nerve conduction study, Global satisfaction score.

Data management: For continuous outcomes all the scores were expressed as the mean difference, standard deviation with 95% confidence intervals. The global satisfaction was evaluated with the number of patients who graded the treatment as very good or good. This outcome was treated as noncontinuous outcome which expressed as odds ratio. The pooled standard deviation from two groups are calculated with DeCoMA using cohen method.

Quality assessment / Risk of bias analysis: Risk of Bias tool, version 2.0.

Strategy of data synthesis: Review Manager, version 5.4.1, software (Nordic Cochrane Centre, Cochrane Collaboration, Copenhagen, Denmark) Random-effects model to pool the estimates according to the presence or absence of heterogeneity.

Subgroup analysis: Different dosage of ALA: 600mg/day, 1200mg/day, 1800mg/day.

Sensitivity analysis: When considerable heterogeneity was present, we performed a

sensitivity analysis to explore the possible explanations for heterogeneity.

Language restriction: English only.

Country(ies) involved: Taiwan.

Other relevant information: No.

Keywords: Alpha lipoid acid; ALA; Diabetic sensorimotor polyneuropathy; DM polyneuropathy; DSPN.

Contributions of each author:

Author 1 - Ruey-Yu Hsieh - Author 1 drafted the manuscript, data extraction, searched databases, title screening, full-text evaluation, quality assessment, statistical analysis.
Email: cythereahsieh@gmail.com
Author 2 - I-Chen Huang - Author 2 data extraction, searched databases, title screening, full-text evaluation, quality assessment.
Email: thyich@gmail.com
Author 3 - Jia-Ying Sung - Author 3 searched databases, development of the selection criteria and exclusion criteria, revised manuscript.
Email: sung.jiaying@gmail.com