IECN 2024 Conference
The 4th International Electronic Conference on Nutrients
16–18 October 2024 | Online
MDPI

Impact of catechin supplementation in older adults with sarcopenia on circulating biomarkers of health status: a systematic review of clinical trials

Fernández-Lázaro D[1], Celorrio A.M.[2], López Llorente A.[1], Molina A[3], Arribalzaga S.[4] & Roche E.[5]

[1]University of Valladolid, [2]University of Leon, [3]University Rovira i Virgili, [4]European University, [5]Miguel Hernando University

INTRODUCTION & AIM

Sarcopenia is a multifactorial syndrome characterized by musculoskeletal involution with loss of skeletal and muscle mass, and strength, leading to dependence, poor quality of life, and mortality. In this respect, nutritional supplementation with antioxidants could mitigate these issues. Therefore, green tea extract (rich in catechins) may improve musculoskeletal function by influencing age-related cellular processes, mainly related to oxidative stress. We aimed to evaluate the current evidence in the literature on catechin supplementation in older adult patients diagnosed with sarcopenia.

METHOD

Rules: PRISMA
Database: Medline, Scopus, CINAHL (from 2007 to 2024).
Quality: McMaster University Occupational Therapy Group.
Risk of bias: Cochrane Tool.

PICOS question

P (population): older adults diagnosed with sarcopenia.
I (intervention): catechin monotherapy treatment.
C (comparison): placebo group, control group, or sham treatment
O (outcome): sarcopenia parameters, health biomarkers, bioavailability, tolerance, and catechins safety.
S (study): randomized controlled trials or not.

RESULTS

Characteristics & interventions

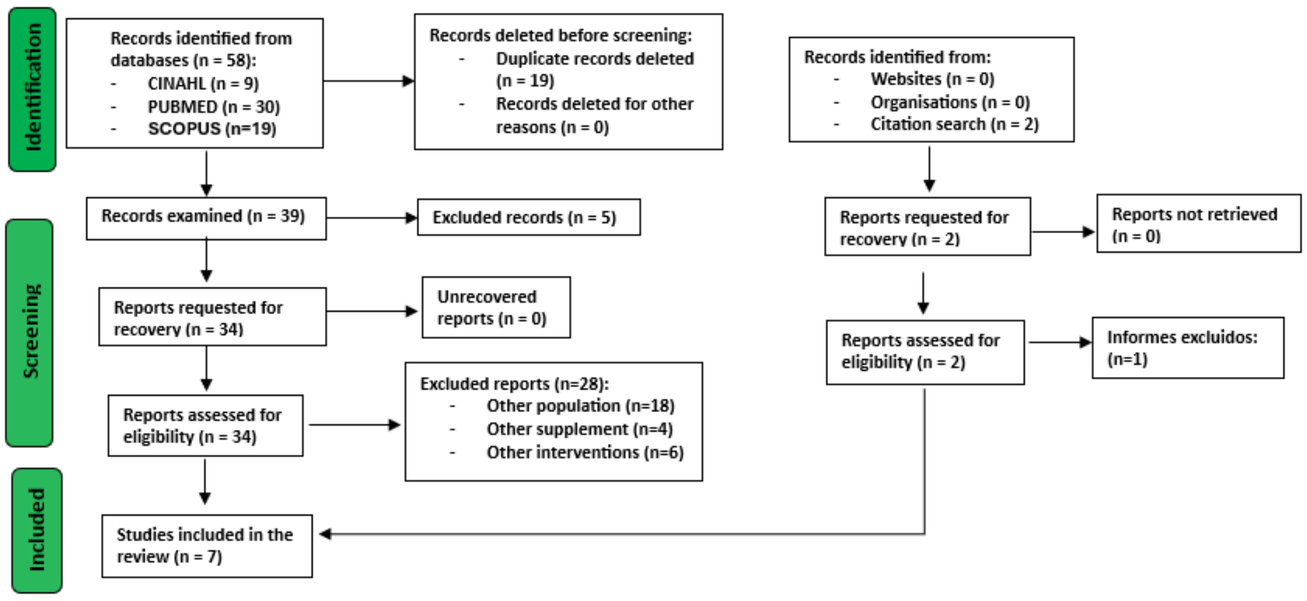
7 Studies included
(randomized controlled trials or not)

- Methodological quality: **81,0-93,8%**
- **505** patients with **sarcopenia**
(320, ♀ and 185 ♂)
- Treatment: **catechin monotherapy**

- ↑* **Hematological parameters**
(↓* leucocytes, 7)
- ↑* **Hormonal response** (4-7)
(↓* myostatin, 7)
- ↑* **Anthropometric parameters** (1, 3-5,7)
(↑* muscle mass, 1)
- ↑* **Physical performance** (3-5)
- ↑ Citrate synthase (6) and cytochrome C oxidase } ↑ **Mitochondrial function**

↑ Increase ↓ Decrease *Statistically significant difference

FIGURES & TABLES



PRISMA Flow diagram

Study, year	ítem 1	2	3	4	5	6	7	8	9	10	11	Total	Quality
Aubertin-Leheudre et al., 2007 (1)	+	+	+	+	+	−	−	+	+	+	+	9	G
Ide K et al., 2016 (2)	+	+	+	+	+	−	−	+	+	+	+	9	G
Kim H et al., 2013 (3)	+	+	+	+	+	+	−	+	+	+	+	10	E
Kim H et al., 2016 (4)	+	+	+	+	+	+	−	+	+	+	+	10	E
Mafi F et al., 2019 (5)	+	+	+	+	+	+	−	+	+	+	+	10	E
McDermott M et al., 2020 (6)	+	+	+	+	+	+	−	+	+	+	+	10	E
Seo H et al., 2021 (7)	+	+	+	+	+	+	−	+	+	+	+	10	E

Abbreviations: − = criterion not fulfilled; + = criterion fulfilled; E= excellent; G= good

McMaster methodological quality

Study	Random sequence generation	Allocation concealment	Blinding (participants and personnel)	Blinding (outcome assessment)	Outcome data	Selective reporting	Other sources of bias	General risk rating
Aubertin-Leheudre et al., 2007 (1)	+	+	+	?	+	?	+	
Ide K et al., 2020 (2)	+	+	?	?	+	?	+	
Kim H et al., 2013 (3)	+	+	+	+	+	?	+	
Kim H et al., 2016 (4)	+	+	?	?	+	?	+	
Mafi F et al., 2019 (5)	+	+	+	?	+	?	+	
McDermott M et al., 2020 (6)	+	+	+	+	+	?	+	
Seo H et al., 2021 (7)	+	+	+	+	+	?	+	

Green: minimal risk of bias; Yellow: = risk of bias unclear; Red = high risk of bias.

Cochrane tool of risk of bias

STUDIES ANALYSED

REFERENCES

CONCLUSION

Oral supplementation with catechins improves muscle mass and strength leading to therapeutic benefits in age-related patients with sarcopenia. The anti-inflammatory and antioxidant effect of catechins could be due to the suppression of transcription factor NF-κß improving the state of skeletal muscle.