

Impact of tomato intake on quality of life: A crossover study

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Thematic area: evidence-based nutrition

Background and objectives

Tomatoes are rich in lycopene, a potent antioxidant with anti-inflammatory and neuroprotective properties. Oxidative stress is linked to the development of depressive symptoms, and tomato products, as a major source of lycopene, may support mental well-being and potentially enhance quality of life (QoL). This study aims to examine the effects of tomato consumption on QoL.

Methods

This randomized crossover trial included 43 healthy adults (40–55 years) who received two interventions for three months each, with a one-month washout: A) 0.5 g/kg body weight of concentrated tomato paste or B) Control (diet with low consumption of tomato or lycopene sources), with randomly assigned sequences (AB or BA). QoL was assessed using the WHOQOL-BREF, which includes physical, psychological, social, and environmental domains, as well as perception of QoL and perception of health, all scored on a 0–100 scale. Linear mixed models compared changes between interventions from baseline to the end of each period. Fixed effects included treatment, period, and sequence (to assess carryover), while subject was a random effect. When residual normality was unmet, robust variance estimation was applied, and due to carryover effects, only period 1 data was analysed for the physical domain. Intragroup pre-post differences and baseline differences between groups were analysed using paired or independent t-tests, or Wilcoxon tests for non-normally distributed variables.

Results

Tomato intervention improved all WHOQOL-BREF domains compared to a low-lycopene diet. Perception of quality of life, perception of health, and social relationships domains significantly decreased ($p < 0.05$) after the low-lycopene diet intervention. In contrast, the physical domain significantly increased following tomato consumption.

Conclusion

These findings suggest that tomato consumption may have a beneficial impact on quality of life, particularly in maintaining mental well-being and physical health. Incorporating tomato products into the diet could be a simple strategy to support overall well-being.

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Summarized Curriculum Vitae

Ricardo López Solís is a PhD candidate in Food and Nutrition at the Faculty of Pharmacy and Food Sciences, University of Barcelona (UB, Spain), supported by a scholarship from Mexico's Department of Science, Humanities, Technology, and Innovation (SECIHTI). He holds a Bachelor's degree in Human Nutrition from the Metropolitan Autonomous University (UAM, Mexico) and a Master's degree in Nutrition Sciences from the Autonomous University of the State of Morelos (UAEM, Mexico). He is a member of the Polyphenol Research Group and serves as the representative of the Early Career Researchers Collective on the Board of Directors of the Institute for Research in Nutrition and Food Safety (INSA-UB), recently recognized as a María de Maeztu Center of Excellence. His doctoral research investigates the health effects of tomatoes and their bioactive compounds using clinical trial data.