Gac Sanit. 2026;40(S4):577

Gaceta Sanitaria

https://www.gacetasanitaria.org

528 - PHTHALATE EXPOSURE IS ASSOCIATED WITH INSULIN RESISTANCE IN ADULTS

M. Sánchez-Martínez, D.M. Mérida, B. Moreno-Franco, M. Laclaustra, A. Muñoz-Cabrejas, N. Calvo-Galiano, B. Jáuregui-Garrido, M.J. Andrés Otero, P. Guallar-Castillón

Universidad Católica Santa Teresa de Jesús de Ávila; Universidad Complutense de Madrid; Universidad Autónoma de Madrid; IMDEA-Food Institute; Universidad de Zaragoza; CIBERCV; Instituto de Investigación Sanitaria Aragón; New York University-GPH.

Resumen

Background/Objectives: Phthalates are ubiquitous endocrine-disrupting chemicals that are associated with metabolic alterations. Insulin resistance (IR) is an early indicator of type 2 diabetes. The objective of this study was to evaluate the association between urinary phthalate metabolites and IR, as measured by HOMA-IR, in healthy adult male workers in Spain.

Methods: A cross-sectional analysis was conducted among 997 participants from the Aragon Workers' Health Study. Fasting plasma glucose and insulin levels were measured, and HOMA-IR was calculated. Urinary concentrations of 11 phthalate metabolites and the molar sum of DEHP metabolites (ΣDEHP) were assessed using LC-MS/MS. We analyzed associations between phthalates and HOMA-IR were analyzed using linear and logistic regression models, adjusting for age, type of work, BMI, physical activity, alcohol intake, smoking, dyslipidemia, and hypertension. Dose-response relationships were evaluated using restricted cubic spline models.

Results: High-molecular-weight phthalates, particularly OH-MiNP and OH-MiDP, were positively associated with HOMA-IR. A 100% increase in OH-MiNP was associated with a 6.8% increase in HOMA-IR, indicating a positive trend. Low molecular weight phthalates showed no significant association.

0213-9111 © 2026 SESPAS. Publicado por Elsevier España, S.L.U. Todos los derechos reservados

Conclusions/Recommendations: Exposure to high-molecular-weight phthalates is associated with increased insulin resistance in healthy men, highlighting the need to reduce environmental exposure to prevent early metabolic alterations.

Funding: Health Research Fund FIS PI20-144 and PI23-240 (State Secretary of R+D and FEDER/FSE. Instituto de Salud Carlos III, Spain).

0213-9111 © 2026 SESPAS. Publicado por Elsevier España, S.L.U. Todos los derechos reservados