In vitro toxicity of reuterin, a potential food biopreservative

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María L. Fernández-Cruz[1,*], Izaskun Martín-Cabrejas[2], José Pérez-del Palacio[3], Pilar Gaya[2], Caridad Díaz-Navarro[3], José M. Navas[1], Margarita Medina[2], Juan L. Arqués[2].

[1] Departamento de Medio Ambiente, Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA), Carretera de la Coruña Km 7, Madrid, Spain
[2] Departamento de Tecnología de Alimentos, Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA), Carretera de la Coruña Km 7, Madrid, Spain
[3] Fundación Centro de Excelencia, Investigación de Medicamentos Innovadores de Andalucía (MEDINA), Parque Tecnológico Ciencias de la Salud, Granada, Spain

[*] Corresponding authors: fcruz@inia.es

Abstract

Reuterin has a high potential as a food preservative due to both its chemical characteristics and its antimicrobial activity against food-borne pathogens and spoilage bacteria. However, there is a lack of information about its toxicity and its capacity to interfere with the metabolism of drugs by inhibiting cytochrome P450 (CYP) activity. The results of this study indicated that reuterin exhibited a moderate cytotoxicity in the human hepatoma cell line HepG2 according to assays measuring three different endpoints in the same set of cells. Reuterin was much less toxic than acrolein and only four times more toxic than diacetyl, a generally recognized as safe flavoring compound. In vitro experiments utilizing human liver microsomes showed that reuterin presents low possibility of displaying in vivo drug interactions by inhibition of CYP3A4, CYP2D6, and CYP2C9. Therefore, reuterin can be considered a promising food biopreservative, although additional toxicology research is needed before permission for use can be granted.