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# Allelopathy of Persian walnut (*Juglans regia* L) and its by-products

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## Abstract

Since antiquity, the walnut tree is known not only for the edible walnut and the highly prized timber but also for his deep roots in folklore and mythology; moreover, walnut provides amongst the earliest recorded suggestion of allelopathy since the tree was considered a source of substances harmful to other organisms by Roman scholars Varro, and Pliny the Elder, who wrote treatises on agriculture dealing with the methods of good crop husbandry. Here we show a brief re- examination of the historical background of the Persian walnut (*Juglans regia* L.) in ancient herbals, to approach to the more recent literature on the allelopathic effects of walnut, with a particular regard to the by-product of its processing, which are indiscriminately employed by farmers for crop irrigation, without preliminary risk assessment. The results of recent publications (cytogenotoxicity on crops development) have posed the necessity to consider them as a hazard to identify solutions for their management through technologies which minimize its environmental impact and ensure a sustainable use of resources. However, an efficient and economical treatment process for walnut husk washing waters, the purification of the wastewater and recovery of compounds with high added value, would be of strategic importance for the walnut industry. We report interesting preliminary results on the antibacterial activity of two main compounds isolated by walnut and its by-products, namely juglone and regiolone.

**Keywords:** walnut walnut husk, *Juglans regia*, juglone, regiolone

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