

Food and natural products

Eugenol derivatives with potential insecticide activity

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Eugenol, the generic name of 4-allyl-2-methoxyphenol, is the major component of clove's essential oil, and displays antimicrobial, antioxidant and insecticide potential.¹⁻³ Its structural simplicity, inexpensively and availability makes it a molecule widely used as a starting material in the preparation of derivatives of natural products and their analogs, as well as building block for obtaining complex functionalized bioactive compounds and co-drugs with improved physicochemical properties, macrocycles, heterocycles, and polymers.⁴⁻⁶ Eugenol is a phenylpropanoid, which has a double bond with capability for further functionalization, namely through epoxidation reaction. As it is well-known, the epoxide is a good and highly reactive synthetic intermediate, because of the associated ring tension, as its opening allows for numerous possibilities, depending on the nucleophiles chosen. Considering all the above facts, in the present work, semisynthetic eugenol derivatives were obtained through epoxidation reaction followed by epoxide opening with nucleophiles, such as sodium azide and sodium cyanide. The optimization of the various reactions was performed using different experimental conditions. The main objective behind obtaining these eugenol derivatives was their evaluation as alternative insecticides, thus the biological activity of all compounds was compared to a commercial synthetic insecticide and tested against *Sf9* (*Spodoptera frugiperda*) insect cell line.

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