

From Agroindustrial Waste Material to Allyl Esters with Potential Activity as Ovicide against Pest

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Waste valorization is a strategic objective in agroindustrial production. Biodiesel production generates important amounts of glycerol that exceed the usual consumption of such compound worldwide. Also, the production of fats and oils produces important amounts of oily rich waste. These fatty waste, used frying fats from food industry and glycerol, can be an interesting source material to obtain some useful products.

In our group, we have developed a two step synthetic pathway to prepare allyl esters from different carboxylic acids and glycerol in yields up to 90%. The first step consists in a free solvent reaction of a mixture of carboxylic acids, glycerol, a chlorine source and a catalyst to obtain the corresponding chlorohydrin esters. In a second step the synthesized 1,3-dichloropropyl esters are used to prepare allyl esters in neutral environment. Both reactions can be carried out by conventional or microwave heating.

The effect of allyl esters of fatty acids has been tested on *Cydia pomonella* (L.) eggs, one important pest in apple orchards. We have found ovicidal activity with 100 % of mortality at a concentration of 10mg/mL.

The next step has been the use of glycerol as obtained from biodiesel production and different fatty waste materials to prepare a mixture of allyl esters. Yields are related to the richness of starting materials and we are testing the activity of the mixture as ovicide, larvicide and wood preservative.

References:

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