Isomerization of Anacardic Acid: A Possible Route to the Synthesis of an Unsaturated Benzolactone and a Kairomone

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Abstract

Crystalline unsaturated lactone, 8-hydroxy-3-tridecyl-1H-isochromen-1-one (6) has been synthesized by isomerization of anacardic acid having heterogeneous alkyl side chains (a mixture of mono-, di-, and tri-unsaturated anacardic acid) (1). Hydrogenation of 8-hydroxy-3-tridecyl-1H-isochromen-1-one produced a saturated lactone, 8-hydroxy-3-tridecyl-3,4-dihydroisochromen-1-one (7). Isomerization of monoene anacardic acid resulted in a crystalline isoanacardic acid, (E)-2-hydroxy-6-(pentadec-1-enyl)benzoic acid (8) as a major product. This was then metathesized with 2-butene to give 3-prop-1-enylphenol (10). Both isomerization reactions used a 1,2-bis(ditertiarybutylphosphinomethyl)benzene modified palladium catalyst. The two products, 8-hydroxy-3-tridecyl-1H-isochromen-1-one and (E)-2-hydroxy-6-(pentadec-1-enyl)benzoic acid have been crystallographically characterized.

Keywords:

Anacardic acid;

Benzolactone;

Double bond isomerisation;

Isoanacardic acid;

Kairomone