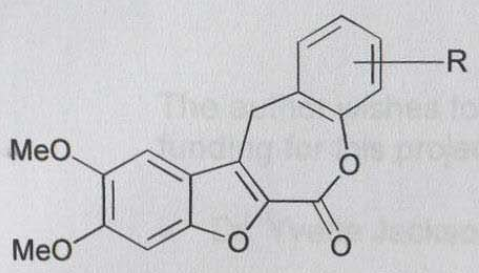
ABSTRACT

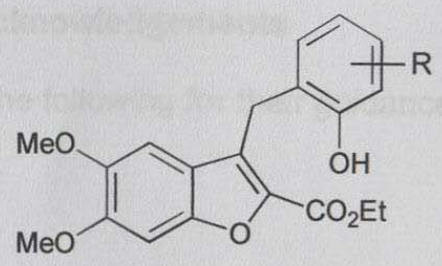
This thesis describes the synthesis of 6-Oxorotenoids. These compounds belong to a family of compounds, the rotenoids, that are important naturally occurring commercial insecticides.

In Chapter one the pharmacology and synthesis of the rotenoids is reviewed.

The synthesis of [1]-benzofurano-[2,3-*c*]-(6*H*,12*H*)-[1]-benzoxepin-6-ones (A) from some 2-carboethoxy-3-(2'-hydroxyarylmethyl)benzofurans (B) is described in Chaper two. The latter could be prepared by the acid (TFA) rearrangement of the respective 2-carboethoxy-3-aryloxymethylbenzofurans(C) or the direct C-alkylation of the respective phenols by the bromomethylbenzofuran (D). The conditions that promote C-alkylation versus O-alklylation are also discussed.



A



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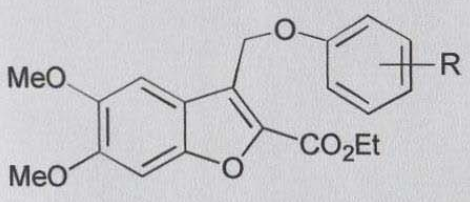

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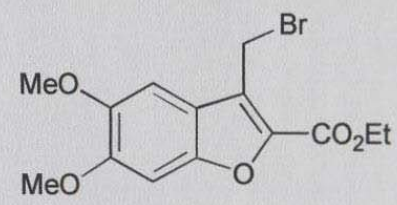

D

In Chapter three, oxidation methods to effect oxidation at allylic or benzylic positions are reviewed, and attempts to synthesise β-rotenonoids by the oxidation of some benzoxepin-6-ones are outlined. Alternate approaches to β-rotenonoids are also described in this chapter. These compounds were seen to be crucial, as the interconversion of β-rotenonoids to 6-oxorotenoids is known.

In Chapter 4 the synthesis of 6-oxorotenoids in overall yields of 34% via a photo-Fries rearrangement of aryl esters is outlined. Insecticidal testing of some of the compounds synthesised is also presented in this chapter. This work was done by Dr. Lawrence Williams.