ABSTRACT

Part I of this thesis reviews the reported synthetic methods for the preparation of 2H-benzo[b] pyrans. 2-Allyl phenols were important precursors and were accessible via the Claisen rearrangement of aryl allyl ethers. This reaction, because of its position as the principal route to these compounds, is also reviewed in Part I.

Part II describes the results of the application of three basic approaches to the synthesis of 2H-benzo[b]pyrans and, in particular, the preparation of hetero-ring substituted 2H-benzo[b]pyrans. These synthetic approaches were designated Approach A, Approach B and Approach C and were investigated in turn.

Approach A consisted of the stepwise synthesis of the aryl allyl ether followed by Claisen rearrangement to yield the 2-allyl phenols. A suitable leaving group would be then introduced at C-1' in the allyl chain so that cyclization of the 2-allyl phenol would be facilitated in either S_N1' or S_N2' processes.

Approach B consisted of the preparation of the required aryl allyl ether followed by Claisen rearrangement to form the 2-allyl phenol. Oxidative cyclization of the latter would then yield the desired 2H-benzo[b] pyran.

Approach C consisted of the synthesis of the aryl allyl ether which already contained a suitable leaving group at C-3' of the allyl chain. Rearrangement of the ether to the desired intermediate would be followed by immediate cyclization to yield the 2H-benzo [b]pyran.

Approach B was found to be moderately successful, the pyran ring was synthesized although the desired 2H-benzo[b]pyran was not obtained. Approach A failed, however, Approach C was quite successful and a number of highly substituted 2H-benzo[b]pyrans were produced. This approach could easily be developed into a general synthetic method for the preparation of 2H-benzo[b]pyrans.