Total Synthesis of Alkyl Citrate Type Natural Products

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The alkyl citrate family of natural products is comprised of a diverse group of metabolites isolated from fungi that exhibit a range of biological activities including inhibition of cholesterol biosynthesis, antifungal and antitumor properties.1 These compounds all contain a common citric acid moiety with an alkyl substituent at the C2 position and some are further oxidised within the citrate fragment. The carboxyl groups can be free acids, as found in L-731,120 (1), L-7321,128 (2), zaragozic acid C (3) and trachypsic acid (4), whilst some are involved in ester, amide and lactone functionalities such as those found in the citrafungin A (5), viridiofungin A (6). The synthesis of either L-731,120 (1) or L-7321,128 (2) has not been reported and the stereochemistry of the alkyl citrate moiety shown is implied by comparison to related natural products. We have been involved with the total synthesis of this class of natural product and this presentation will address the production of a number of these with an emphasis on the stereoselective production of the alkyl citrate moiety.

Reference