ENZYMATIC SYNTHESIS OF MACROLACTONES

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ABSTRACT

Macrolactones are a large and structurally diverse class of compounds. Natural products having a macrolactone structure have been isolated from many natural sources such as plants, insects, marine organism and bacteria. Because of their biological and medicinal activity, macrolactones are very important target molecules in organic synthesis. The difficulty in controlling the ring formation step has provided the basis for many synthetic methodology studies. This PhD work is devoted to the development and application of a protocol for the improvement of the enzymatic approach to synthesize macrolactones.

Chapter 1 outlines the state of art of biotransformations with special emphasis on the use of lipase in organic synthesis.

In Chapter 2 a literature review about macrolactones and the methods for their synthesis is reported.

Chapters 3 and 4 describe the experimental work of this thesis focused on the optimization of the enzymatic methodology for the synthesis of macrolactons and its application to the synthesis of some bioactive macrolactons. A discussion of enantioselectivity, regioselectivity observed in these syntheses allowed some useful conclusion on the advantages and limitation of this methodology.