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ENZYMATIC SYNTHESIS OF MACROLACTONES

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TABLE OF CONTENTS

ABSTRACT	I
CHAPTER 1: BIOCATALYSIS IN ORGANIC SYNTHESIS	1
1.1 – Biocatalysis : a green tool in organic chemistry	2
1.2 – Enzymes in organic chemistry.....	5
1.2.1 Introduction.....	5
1.2.2 Kinetic reasons that govern the selectivity.....	7
1.2.3 Advantages and drawbacks of biocatalysts.....	8
1.2.4 Biotransformations in organic chemistry.....	11
1.2.5 Lipases.....	12
1.2.6 Candida antarctica lipase B.....	17
CHAPTER 2: MACROLACTONES : BIOACTIVITY AND SYNTHESIS	23
2.1 – Introduction to macrolactones	24
2.1.1 Macrolactones of pharmaceutical interest.....	25
2.1.2 Macrolactones as chemical signals.....	27
2.1.3 Macrolactones (and other macrocycles) in fragrance industry.....	31
2.2 – Chemical synthesis of macrolactons	34
2.2.1 Macrolides by ring closure trough acid activation.....	36
2.2.2 Ring closure trough the formation of anhydride intermediate.....	38
2.2.3 Macrolides by ring closure by alcohol activation.	39
2.2.4 Ring closure by C–C and C=C bond formation.....	40
2.2.5 Other methodologies.....	42
CHAPTER 3– ENZYME CATALYZED MACROLACTONIZATION	45
3.1 – Introduction	46
3.2 – Improvement of enzymatic lactonization	52

3.2.1	Choice of substrate.....	53
3.2.2	Enzyme choice.....	53
3.2.3	Solvent choice.....	55
3.2.4	Water content of organic medium.....	56
3.2.5	Concentration of substrate.....	58
3.2.6	Temperature.....	58
3.2.7	Reaction time	59
3.2.8	Cyclization of 16 hydroxy hexadecanoic acid.....	59
3.2.9	Cyclization without biocatalyst.....	60
3.2.10	Recovery of enzyme.....	60
3.2.11	Summary of results.....	61
3.3	– Macrolactones from ω -hydroxy esters. Synthesis of musky compounds	61
3.3.1	Hexadecanolide.....	62
3.3.2	Exaltolide.....	62
3.3.3	Ambrettolide.....	63
3.4	– Macrolactones from hydroxyesters owning secondary alcohol	67
3.4.1	Chemo-enzymatic synthesis 15-hexadecanolide.....	68
3.4.2	Synthesis of 15-octadec-12-enolide.....	74
3.5	– Macrolactones from dihydroxyesters	77
3.5.1	Lactone from poly-hydroxylated substrates: synthesis of aleuritic lactone	78
3.5.2	Synthesis of aplyolides B and D.....	78
3.5.3	Synthesis of enantiomers of aplyolides B and D.....	83
3.5.4	Synthesis of aplyolides C and E	85
3.5.5	Synthesis of enantiomers of aplyolides C and E.....	87
3.5.6	Macrolactonization of 15(<i>R</i>),16(<i>R</i>)-dihydroxy-octadecanoic acid methyl ester.....	88
3.5.7	Final considerations on lipase catalyzed lactonization of dihydroxyesters.....	89
3.6	– Conclusions	91

CHAPTER 4 - EXPERIMENTAL	92
4.1 - Synthesis of 16-hexadecanolide	94
4.2 - Synthesis of exaltolide	95
4.3 - Synthesis of ambrettolide	97
4.4 - Synthesis of 15-hexadecanolide	102
4.5 - Synthesis of 15-octadec-12-enolide.....	117
4.6 - Synthesis of aplyiolides B and D	122
4.7 - Synthesis of enantiomers of aplyiolides B and D	129
4.8 - Synthesis of aplyiolides B and D	131
4.9 - Synthesis of enantiomers of aplyiolides C and E	140
4.10 - Lactonization of methyl 15 (<i>R</i>),16(<i>R</i>) –dihydroxy-octadecanoate	142
4.11 - Synthesis of aleuritic lactone	144
REFERENCES	146

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.