

ห้องสมุดงานวิจัย สำนักงานคณะกรรมการวิจัยแห่งชาติ



E47261



APPLICATION OF BENZOTRIAZOLES AS MILD AND
STABLE ESTERIFYING AGENTS

MISS PATTAJAREE TEABSAEN

A THESIS FOR THE DEGREE OF MASTER OF SCIENCE

KHON KAEN UNIVERSITY

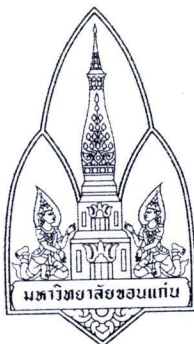
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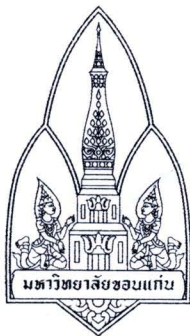
2011

**APPLICATION OF BENZOTRIAZOLES AS MILD AND
STABLE ESTERIFYING AGENTS**

MISS PATTAJAREE TEABSAEN

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE
IN ORGANIC CHEMISTRY
GRADUATE SCHOOL KHON KAEN UNIVERSITY**

2011



THESIS APPROVAL
KHON KAEN UNIVERSITY
FOR
MASTER OF SCIENCE
IN ORGANIC CHEMISTRY

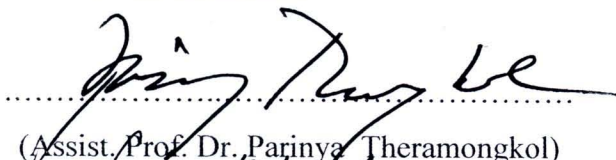
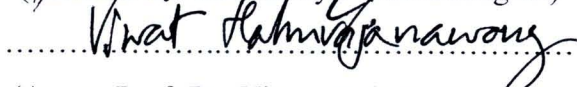
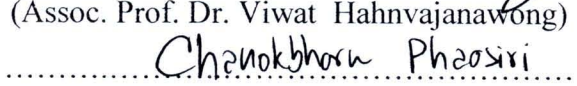
Thesis Title: Application of benzotriazoles as mild and stable esterifying agents.



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พัทจารี เทียบแสน. 2554. การใช้เบนโซโทรเอโซลเป็นรีเอเจนต์ที่เสถียรและไม่รุนแรง สำหรับ
ปฏิกิริยาเอสเทอร์ฟิเคชัน วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต สาขาวิชาเคมี
อินทรีย์ บัณฑิตวิทยาลัย มหาวิทยาลัยขอนแก่น.

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บทคัดย่อ

E47261

ได้พบวิธีการสังเคราะห์เอสเทอร์ที่ง่าย และ มีประสิทธิภาพ โดยอาศัยคุณสมบัติเชิงเคมี
ของสารเบนโซโทรเอโซลและได้สังเคราะห์ *N*-acylbenzotriazole **2a-b**, **12a-b** และ **22b** ขึ้น และใช้
ในการสังเคราะห์เอสเทอร์ของอะลิฟาติกแอลกอฮอล์ **4c-j** และ **5a-j** รวมทั้งเอสเทอร์ของอะโร
มาติกแอลกอฮอล์ **7a-c** ได้ ด้วยเปอร์เซ็นต์ผลได้สูง การทดสอบความว่องไวต่อการเกิดเอสเทอร์
พบว่า สาร **22b** มีความว่องไวสูงที่สุด นอกจากนี้ยังสามารถแยกสารผลิตภัณฑ์ได้ง่ายโดยวิธีการ
สกัดด้วยสารละลายเบสแทนที่จะต้องใช้วิธีการโครมาโทกราฟี

Pattajaree Teabsae. 2011. **Application of Benzotriazoles as Mild and Stable Esterifying Agents.** Master of Science Thesis in Organic Chemistry, Graduate School, Khon Kaen University.

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ABSTRACT

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A simple and efficient method for the synthesis of esters is established using benzotriazole chemistry. The *N*-acylbenzotriazoles **2a-b**, **12a-b** and **22b** have been synthesized and used for high-yielding synthesis of both aliphatic (**4c-j**, **5a-j**) and aromatic (**7a-c**) esters. Evaluation of esterification reactivity reveals that **22b** is the most reactive reagent. Separation of the products has been successfully simplified by using simple basic extraction instead of the routine chromatographic method.

**The good aspects of the present thesis are dedicated to
my parents, my relatives, my entire teaching staff, my friends and
everything in the world.**

ACKNOWLEDGEMENTS

I wish to express my admiration and appreciation to Asst. Prof. Dr. Parinya Theramongkol, my major advisor, for his kindly providing me a good opportunity to study in this field, supervision, the laboratory facilities, encouragement, valuable suggestion and entire criticism throughout the course of study. I deeply appreciate the time his spared me during the laboratory work and also the preparation of this thesis.

I thank my co-advisor, Assoc. Prof. Dr. Viwat Hahnvajanawong and Assist. Prof. Dr. Chanokbhorn Phaosiri for providing the focus and encouragement I needed to complete my work. Moreover, I am indebted to Assoc. Prof. Dr. Somdej Kanokmedhakul and Dr. Arisara Issaree for their valuable discussions and comments on this thesis.

I would like to gratefully acknowledge the Center of Excellence for Innovation in Chemistry: Postgraduate Education and Research Program in Chemistry (PERCH-CIC) for financial support of this work. I am thankful to the Department of Chemistry, Faculty of Science, Khon Kaen University, for providing instrumental support and all other facilities.

My appreciation is extended to all the staff of the Department of Chemistry. Furthermore, I feel thankful to my friends, sisters and brothers here in this Department, Mr. Kitisak Poopasit for his elegant spectra work, and especially, Miss Patra Ramlee for equipments and reagents during my research work.

Last and most of all, I wish to show my heartfelt gratitude here to my family, especially, my beloved parents for their tender love, care, encouragement, and constant support throughout my studies.

Pattajaree Teabsaen

TABLE OF CONTENTS

	Page
ABSTRACT (IN THAI)	i
ABSTRACT (IN ENGLISH)	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	xvii
CHAPTER I INTRODUCTION	1
CHAPTER II RESULTS AND DISCUSSION	14
CHAPTER III EXPERIMENTAL	43
CHAPTER IV CONCLUSIONS	67
REFERENCES	71
APPENDIX	76
VITAE	143

LIST OF TABLES

		Page
Table 1.1	Acylbenzotriazoles prepared by Katritzky's methods. .	10
Table 2.1	Synthesis of esters from alcohols 3a-j .	17
Table 2.2	Synthesis of esters 7a-c from phenol 6a-c .	25
Table 2.3	Esterification of 1 ^o and 2 ^o alcohols with 2a , 12a , 12b and 22b .	39

LIST OF FIGURES

	Page
Figure 1.1	Ester from fruits. 1
Figure 1.2	Structural of propane-1,2,3-triyl tripalmitate and dibutyl phthalate. 2
Figure 1.3	Preparation of esters. 2
Figure 1.4	Synthesis of ethyl benzoate. 3
Figure 1.5	The synthesis of aspirin. 4
Figure 1.6	Transesterification. 4
Figure 1.7	The synthesis of methyl cyclohexanecarboxylate. 5
Figure 1.8	The synthesis of ethyl-2,4,6-trimethyl benzoate. 5
Figure 1.9	Steglich esterification. 6
Figure 1.10	Modified Fisher esterifications employing newly developed catalysts. 6
Figure 1.11	Diazotization of <i>o</i> -phenyldiamine. 7
Figure 1.12	Synthetic tool of benzotriazole for many chemical processes. 8
Figure 1.13	Preparation of 4(7)-nitrobenzotriazole. 8
Figure 1.14	Iodination of benzotriazole. 9
Figure 1.15	Preparation of <i>N</i> -acylbenzotriazoles. 9
Figure 1.16	<i>N</i> -Acylbenzotriazoles in organic synthesis. 11
Figure 1.17	Reaction of <i>N</i> -acylbenzotriazole with SmI ₂ . 11
Figure 1.18	<i>C</i> -Acylation of acetoacetic ester. 12
Figure 1.19	Katritzky's ester synthesis via <i>N</i> -acylbenzotriazole. 12
Figure 2.1	Preparation of benzotriazole. 14
Figure 2.2	Preparation of <i>N</i> -acylbenzotriazole. 15
Figure 2.3	Alcohols 3a-j . 16
Figure 2.4	Esters 4c-j . 18
Figure 2.5	Ester 5a-j . 21
Figure 2.6	Ester 7a-c . 25

LIST OF FIGURES (Cont.)

		Page
Figure 2.7	Ester synthesis using <i>N</i> -Acylbenzotriazole with an Electron Withdrawing Group.	27
Figure 2.8	Attempted nitration of 1a and 2a .	27
Figure 2.9	General retrosynthesis of <i>N</i> -acylbenzotriazole with Electron withdrawing Groups attached.	28
Figure 2.10	Preparation of dibromonitroaniline (9a).	28
Figure 2.11	Preparation of dibromobenzotriazole (11a).	29
Figure 2.12	Preparation of propionylbromobenzotriazole (12a).	29
Figure 2.13	Preparation of dichloronitroaniline (9b).	30
Figure 2.14	Preparation of dichlorobenzotriazole (11b) and propionyl dichlorobenzotriazole (12b).	31
Figure 2.15	<i>N</i> -Acylbenzotriazolecarboxylic acid as an acylating agent.	32
Figure 2.16	Retrosynthesis of <i>N</i> -acylcarboxylbenzotriazole-5-carboxylic acid (17).	32
Figure 2.17	Synthesis of <i>N</i> - <i>p</i> -tolylacetamide (13).	32
Figure 2.18	Synthesis of <i>N</i> -(4-methyl-2-nitrophenyl)acetamide (14).	33
Figure 2.19	Synthesis of <i>N</i> -acetylbenzotriazole (16).	34
Figure 2.20	Attempted oxidation of <i>N</i> -acetylbenzotriazole (16).	34
Figure 2.21	Retrosynthesis of <i>N</i> -acylcarboxylbenzotriazole-6-carboxylic acid (22a).	35
Figure 2.22	Synthesis of <i>N</i> -acetylbenzotriazole carboxylate ester (22a).	35
Figure 2.23	Attempted to synthesize of propionylbenzotriazole-5-carboxylic acid (24).	37
Figure 2.24	Synthesis of the <i>N</i> -propionyl analogue (22b).	37
Figure 2.25	Mechanism of acylation of alcohol with 12b .	41
Figure 2.26	Mechanism of acylation of alcohol with 22b .	42

LIST OF FIGURES (Cont.)

	Page
Figure 4.1	Preparation of benzotriazole (1a). 67
Figure 4.2	Preparation of <i>N</i> -propionylbenzotriazole (2a) and <i>N</i> -benzoylbenzotriazole (2b). 67
Figure 4.3	Preparation of esters from <i>N</i> -acylbenzotriazoles and alcohols. 68
Figure 4.4	synthesis of Dibromopropionylbenzotriazole (12a) and Dichloropropionylbenzotriazole (12b). 68
Figure 4.5	Synthesis of ethylpropionylbenzotriazolcarboxylate (22b). 69

LIST OF FIGURES (Cont.)

		Page
Figure 1	IR spectrum of 1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole (1a)	77
Figure 2	¹ H NMR spectrum of 1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole (1a)	77
Figure 3	¹³ C NMR spectrum of 1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole (1a)	78
Figure 4	IR spectrum of 1-(1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)propan-1-one (2a)	78
Figure 5	¹ H NMR spectrum of 1-(1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)propan-1-one (2a)	79
Figure 6	¹³ C NMR spectrum of 1-(1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)propan-1-one (2a)	79
Figure 7	IR spectrum of (1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)(phenyl)methanone (2b)	80
Figure 8	¹ H NMR spectrum of (1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)(phenyl)methanone (2b)	80
Figure 9	¹³ C NMR spectrum of (1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)(phenyl)methanone (2b)	81
Figure 10	IR spectrum of 2,4-dibromo-6-nitroaniline (9)	81
Figure 11	¹ H NMR spectrum of 2,4-dibromo-6-nitroaniline (9)	82
Figure 12	¹³ C NMR spectrum of 2,4-dibromo-6-nitroaniline (9)	82
Figure 13	IR spectrum of 4,6-dibromo-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole (11a)	83
Figure 14	¹ H NMR spectrum of 4,6-dibromo-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole (11a)	83
Figure 15	¹³ C NMR spectrum of 4,6-dibromo-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole (11a)	84
Figure 16	IR spectrum of 5,7-dibromo-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)(phenyl)methanone (12a)	84
Figure 17	¹ H NMR spectrum of 5,7-dibromo-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)(phenyl)methanone (12a)	85

LIST OF FIGURES (Cont.)

		Page
Figure 18	^{13}C NMR spectrum of 5,7-dibromo-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)- (phenyl)methanone (12a)	85
Figure 19	IR spectrum of 2,4-dichloro-6-nitroaniline (9b)	86
Figure 20	^1H NMR spectrum of 2,4-dichloro-6-nitroaniline (9b)	86
Figure 21	^{13}C NMR spectrum of 2,4-dichloro-6-nitroaniline (9b)	87
Figure 22	IR spectrum of 4,6-dichloro-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole (11b)	87
Figure 23	^1H NMR spectrum of 4,6-dichloro-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole (11b)	88
Figure 24	^{13}C NMR spectrum of 4,6-dichloro-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole (11b)	88
Figure 25	IR spectrum of 5,7-dibromo-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)(phenyl)methanone (12b)	89
Figure 26	^1H NMR spectrum of 5,7-dibromo-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)(phenyl)methanone (12b)	89
Figure 27	^{13}C NMR spectrum of 5,7-dibromo-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)(phenyl)methanone (12b)	90
Figure 28	IR spectrum of <i>N</i> - <i>p</i> -tolylacetamide (13)	90
Figure 29	^1H NMR spectrum of <i>N</i> - <i>p</i> -tolylacetamide (13)	91
Figure 30	^{13}C NMR spectrum of <i>N</i> - <i>p</i> -tolylacetamide (13)	91
Figure 31	IR spectrum of <i>N</i> -(4-methyl-2-nitrophenyl)acetamide (14)	92
Figure 32	^1H NMR spectrum of <i>N</i> -(4-methyl-2-nitrophenyl)acetamide (14)	92
Figure 33	^{13}C NMR spectrum of <i>N</i> -(4-methyl-2-nitrophenyl)acetamide (14)	93
Figure 34	IR spectrum of 1-(5-methyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)ethanone (16)	93
Figure 35	^1H NMR spectrum of 1-(5-methyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)-ethanone (16)	94

LIST OF FIGURES (Cont.)

		Page
Figure 36	^{13}C NMR spectrum of 1-(5-methyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)-ethanone (16)	94
Figure 37	IR spectrum of ethyl-4-aminobenzoate (18)	95
Figure 38	^1H NMR spectrum of ethyl-4-aminobenzoate (18)	95
Figure 39	^{13}C NMR spectrum of ethyl-4-aminobenzoate (18)	96
Figure 40	IR spectrum of ethyl-4-acetamidobenzoate (19a)	96
Figure 41	^1H NMR spectrum of ethyl-4-acetamidobenzoate (19a)	97
Figure 42	^{13}C NMR spectrum of ethyl-4-acetamidobenzoate (19a)	97
Figure 43	IR spectrum of ethyl-4-acetamido-3-nitrobenzoate (20a)	98
Figure 44	^1H NMR spectrum of ethyl 4-acetamido-3-nitrobenzoate (20a)	98
Figure 45	^{13}C NMR spectrum of ethyl-4-acetamido-3-nitrobenzoate (20a)	99
Figure 46	IR spectrum of ethyl-4-acetamido-3-aminobenzoate (21a)	99
Figure 47	^1H NMR spectrum of ethyl-4-acetamido-3-aminobenzoate (21a)	100
Figure 48	^{13}C NMR spectrum of ethyl-4-acetamido-3-aminobenzoate (21a)	100
Figure 49	IR spectrum of ethyl-1-acetyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole-5-carboxylate (22a)	101
Figure 50	^1H NMR spectrum of ethyl-1-acetyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole-5-carboxylate (22a)	101
Figure 51	^{13}C NMR spectrum of ethyl-1-acetyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole-5-carboxylate (22a)	102
Figure 52	IR spectrum of ethyl-4-propionamidobenzoate (19b)	102
Figure 53	^1H NMR spectrum of ethyl-4-propionamidobenzoate (19b)	103
Figure 54	^{13}C NMR spectrum of ethyl-4-propionamidobenzoate (19b)	103
Figure 55	IR spectrum of ethyl-3-nitro-4-propionamidobenzoate (20b)	104

LIST OF FIGURES (Cont.)

		Page
Figure 36	^{13}C NMR spectrum of 1-(5-methyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazol-1-yl)-ethanone (16)	94
Figure 37	IR spectrum of ethyl-4-aminobenzoate (18)	95
Figure 38	^1H NMR spectrum of ethyl-4-aminobenzoate (18)	95
Figure 39	^{13}C NMR spectrum of ethyl-4-aminobenzoate (18)	96
Figure 40	IR spectrum of ethyl-4-acetamidobenzoate (19a)	96
Figure 41	^1H NMR spectrum of ethyl-4-acetamidobenzoate (19a)	97
Figure 42	^{13}C NMR spectrum of ethyl-4-acetamidobenzoate (19a)	97
Figure 43	IR spectrum of ethyl-4-acetamido-3-nitrobenzoate (20a)	98
Figure 44	^1H NMR spectrum of ethyl 4-acetamido-3-nitrobenzoate (20a)	98
Figure 45	^{13}C NMR spectrum of ethyl-4-acetamido-3-nitrobenzoate (20a)	99
Figure 46	IR spectrum of ethyl-4-acetamido-3-aminobenzoate (21a)	99
Figure 47	^1H NMR spectrum of ethyl-4-acetamido-3-aminobenzoate (21a)	100
Figure 48	^{13}C NMR spectrum of ethyl-4-acetamido-3-aminobenzoate (21a)	100
Figure 49	IR spectrum of ethyl-1-acetyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole-5-carboxylate (22a)	101
Figure 50	^1H NMR spectrum of ethyl-1-acetyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole-5-carboxylate (22a)	101
Figure 51	^{13}C NMR spectrum of ethyl-1-acetyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole-5-carboxylate (22a)	102
Figure 52	IR spectrum of ethyl-4-propionamidobenzoate (19b)	102
Figure 53	^1H NMR spectrum of ethyl-4-propionamidobenzoate (19b)	103
Figure 54	^{13}C NMR spectrum of ethyl-4-propionamidobenzoate (19b)	103
Figure 55	IR spectrum of ethyl-3-nitro-4-propionamidobenzoate (20b)	104

LIST OF FIGURES (Cont.)

		Page
Figure 56	¹ H NMR spectrum of ethyl-3-nitro-4-propionamidobenzoate (20b)	104
Figure 57	¹³ C NMR spectrum of ethyl-3-nitro-4-propionamidobenzoate (20b)	105
Figure 58	IR spectrum of ethyl-3-amino-4-propionamidobenzoate (21b)	105
Figure 59	¹ H NMR spectrum of ethyl-3-amino-4-propionamidobenzoate (21b)	106
Figure 60	¹³ C NMR spectrum of ethyl-3-amino-4- propionamidobenzoate (21b)	106
Figure 61	IR spectrum of ethyl-1-propionyl-1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole- 5-carboxylate (22b)	107
Figure 62	¹ H NMR spectrum of ethyl-1-propionyl-1 <i>H</i> - benzo[<i>d</i>][1,2,3]triazole-5-carboxylate (22b)	107
Figure 63	¹³ C NMR spectrum of ethyl-1-propionyl-1 <i>H</i> - benzo[<i>d</i>][1,2,3]triazole-5-carboxylate (22b)	108
Figure 64	IR spectrum of 1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole-5-carboxylic acid (23)	108
Figure 65	¹ H NMR spectrum of 1 <i>H</i> -benzo[<i>d</i>][1,2,3]triazole-5-carboxylic acid (23)	109
Figure 66	IR spectrum of butyl propionate (4c)	109
Figure 67	¹ H NMR spectrum of butyl propionate (4c)	110
Figure 68	¹³ C NMR spectrum of butyl propionate (4c)	110
Figure 69	IR spectrum of benzyl propionate (4d)	111
Figure 70	¹ H NMR spectrum of benzyl propionate (4d)	111
Figure 71	¹³ C NMR spectrum of benzyl propionate (4d)	112
Figure 72	IR spectrum of cinnamyl propionate (4e)	112
Figure 73	¹ H NMR spectrum of cinnamyl propionate (4e)	113

LIST OF FIGURES (Cont.)

		Page
Figure 74	^{13}C NMR spectrum of cinnamyl propionate (4e)	113
Figure 75	IR spectrum of phenethyl propionate (4f)	114
Figure 76	^1H NMR spectrum of phenethyl propionate (4f)	114
Figure 77	^{13}C NMR spectrum of phenethyl propionate (4f)	115
Figure 78	IR spectrum of phenethyl propionate(4g)	115
Figure 79	^1H NMR spectrum of 1-phenylethyl propionate (4g)	116
Figure 80	^{13}C NMR spectrum of 1-phenylethyl propionate (4g)	116
Figure 81	IR spectrum of 1-phenylethyl propionate (4h)	117
Figure 82	^1H NMR spectrum of 1-phenylethyl propionate (4h)	117
Figure 83	^{13}C NMR spectrum of 1-phenylethyl propionate (4h)	118
Figure 84	IR spectrum of 1-(4-chlorophenyl)ethyl propionate (4i)	118
Figure 85	^1H NMR spectrum of 1-(4-chlorophenyl)ethyl propionate (4i)	119
Figure 86	^{13}C NMR spectrum of 1-(4-chlorophenyl)ethyl propionate (4i)	119
Figure 87	IR spectrum of benzhydryl propionate (4j)	120
Figure 88	^1H NMR spectrum of benzhydryl propionate (4j)	120
Figure 89	^{13}C NMR spectrum of benzhydryl propionate (4j)	121
Figure 90	IR spectrum of methyl benzoate (5a)	121
Figure 91	^1H NMR spectrum of methyl benzoate (5a)	122
Figure 92	^{13}C NMR methyl benzoate (5a)	122
Figure 93	IR spectrum of ethyl benzoate (5b)	123
Figure 94	^1H NMR spectrum of ethyl benzoate (5b)	123
Figure 95	^{13}C NMR spectrum of ethyl benzoate (5b)	124
Figure 96	IR spectrum of butyl benzoate (5c)	124
Figure 97	^1H NMR spectrum of butyl benzoate (5c)	125
Figure 98	^{13}C NMR spectrum of butyl benzoate (5c)	125
Figure 99	IR spectrum of benzyl benzoate (5d)	126
Figure 100	^1H NMR spectrum of benzyl benzoate (5d)	126

LIST OF FIGURES (Cont.)

		Page
Figure 101	¹³ C NMR spectrum of benzyl benzoate (5d)	127
Figure 102	IR spectrum of phenethyl benzoate (5e)	127
Figure 103	¹ H NMR spectrum of phenethyl benzoate (5e)	128
Figure 104	¹³ C NMR spectrum of phenethyl benzoate (5e)	128
Figure 105	IR spectrum of cinnamylbenzoate (5f)	129
Figure 106	¹ H NMR spectrum of cinnamyl benzoate (5f)	129
Figure 107	¹³ C NMR spectrum of cinnamyl benzoate (5f)	130
Figure 108	IR spectrum of <i>sec</i> -butyl benzoate (5g)	130
Figure 109	¹ H NMR spectrum of <i>sec</i> -butyl benzoate (5g)	131
Figure 110	¹³ C NMR spectrum of <i>sec</i> -butyl benzoate (5g)	131
Figure 111	IR spectrum of phenethyl benzoate (5h)	132
Figure 112	¹ H NMR spectrum of phenethyl benzoate (5h)	132
Figure 113	¹³ C NMR spectrum of phenethyl benzoate (5h)	133
Figure 114	IR spectrum of 1-(4-chlorophenyl)ethyl benzoate (5i)	133
Figure 115	¹ H NMR spectrum of 1-(4-chlorophenyl)ethylbenzoate (5i)	134
Figure 116	¹³ C NMR spectrum of 1-(4-chlorophenyl)ethyl benzoate (5i)	134
Figure 117	IR NMR spectrum of benzhydryl benzoate (5j)	135
Figure 118	¹ H NMR spectrum of phenyl benzoate (5j)	135
Figure 119	¹³ C NMR spectrum of phenyl benzoate (5j)	136
Figure 120	IR spectrum of phenyl benzoate (7a)	136
Figure 121	¹ H NMR spectrum of phenyl benzoate (7a)	137
Figure 122	¹³ C NMR spectrum of phenyl benzoate (7a)	137
Figure 123	IR spectrum of <i>o</i> -tolyl benzoate (7b)	138
Figure 124	¹ H NMR spectrum of <i>o</i> -tolyl benzoate (7b)	138
Figure 125	¹³ C NMR spectrum of <i>o</i> -tolyl benzoate (7b)	139
Figure 126	IR spectrum of 4-chlorophenyl benzoate (7c)	139
Figure 127	¹ H NMR spectrum of 4-chlorophenyl benzoate (7c)	140

LIST OF FIGURES (Cont.)

	Page
Figure 128 ^{13}C NMR spectrum of 4-chlorophenyl benzoate (7c)	140

LIST OF ABBREVIATIONS

δ	Chemical shift
ν	Wavenumber
^{13}C NMR	Carbon Nuclear Magnetic Resonance
^1H NMR	Proton Nuclear Magnetic Resonance
AcOH	Acetic acid
Ac ₂ O	Acetic anhydride
aq.	Aqueous
CC	Column Chromatography
CD ₃ OD	Methanol- <i>d</i> ₄
CDCl ₃	Chloroform- <i>d</i>
conc.	Concentration
d	Doublet
dd	Doublet of doublet
DMSO- <i>d</i> ₆	Dimethylsulfoxide- <i>d</i> ₆
Hz	Hertz
IR	Infrared Spectrum
<i>J</i>	Coupling constant
lit.	Literature
m	Multiplet (^1H NMR spectra)
M	Molar
MHz	Megahertz
min	Minute
mmol	Millimole
mL	Milliliter
mp	Melting point
Pd-C	Palladium on activated charcoal
ppm	Parts per million
R _f	Retardation factor

LIST OF ABBREVIATIONS (Cont.)

rt	Room temperature
s	Singlet (¹ H NMR spectra)
t	Triplet
TAB	Tetrabutyl ammonium bromide