

## Table of Contents

### 1 Introduction

1.1	Literature Synthesis of C-Allylglycine Derivatives.....	1
1.1.1	General.....	1
1.1.2	Electrophilic Amination of Enolates.....	3
1.1.3	Nucleophilic Amination of $\alpha$ -Substituted Acids .....	5
1.1.4	Allylation of Glycine Enolate with Allyl Halides.....	7
1.1.5	Allylation of Iminium Salts with Allyl Metal Compound.....	8
1.1.6	Synthesis of C-Allylglycine Derivatives via Claisen Rearrangement.....	9
1.2	Zwitterionic Aza-Claisen Rearrangement.....	10
1.3	Ring-Closing Olefin Metathesis.....	13
1.4	Amaryllidaceae Alkaloids.....	15
1.5	Objektives.....	17
<b>2</b>	<b>Result and Discussion</b>	
2.1	Syntheses of <i>N</i> -Allylpyrrolidines.....	19
2.2	Syntheses of Carboxylic Acid Fluorides.....	23
2.3	Zwitterionic Aza-Claisen Rearrangement and Evidence of the Absolute Configuration.....	27
2.4	Rationalization of the Stereochemical Outcome.....	36
2.5	Consecutive Processes: Introduction of the Piperonyl Group (1).....	43
2.6	Removal of the Chiral Auxiliary: Introduction of the Piperonyl Group (2).....	49
2.7	Transformations of the Isoquinolone.....	53
2.8	Transformations of the Acyclic Ketones.....	58
2.9	Ring-Closing Metathesis with Grubbs Catalyst.....	62
2.10	Summary and Outlook.....	65
2.10.1	Summary.....	65
2.10.2	Outlook.....	71

### **3 Experimental Part**

3.1	Materials and Methods.....	74
3.1.1	General.....	74
3.1.2	NMR-Spectroscopy.....	74
3.1.3	IR-Spectroscopy.....	74
3.1.4	MS-Spectroscopy.....	75
3.1.5	Polarimetry.....	75
3.1.6	Chromatography.....	75
3.2	Syntheses of <i>N</i> -Allylpyrrolidines.....	77
3.3	Syntheses of Carboxylic Acids.....	89
3.4	Syntheses of Carboxylic Acid Fluorides.....	98
3.5	Zwitterionic Aza-Claisen Rearrangement.....	103
3.6	Syntheses of Piperazine and Furanone Derivatives.....	122
3.7	Syntheses of <i>β</i> -4-enoic Acid Derivatives.....	131
3.8	Syntheses of Diastereomers of $\alpha$ -Amino- pent-4-enoic Acid Derivatives.....	133
3.9	Syntheses of Isoquinolone Derivatives.....	136
3.10	Syntheses of Acyclic $\alpha$ -Amino Ketone Derivatives.....	150
3.11	Ring-Closing Olefin Metathesis.....	160
<b>4</b>	<b>Appendix</b>	
4.1	List of Abbreviation.....	166
4.2	Abstract.....	168
4.3	Kurzfassung.....	169