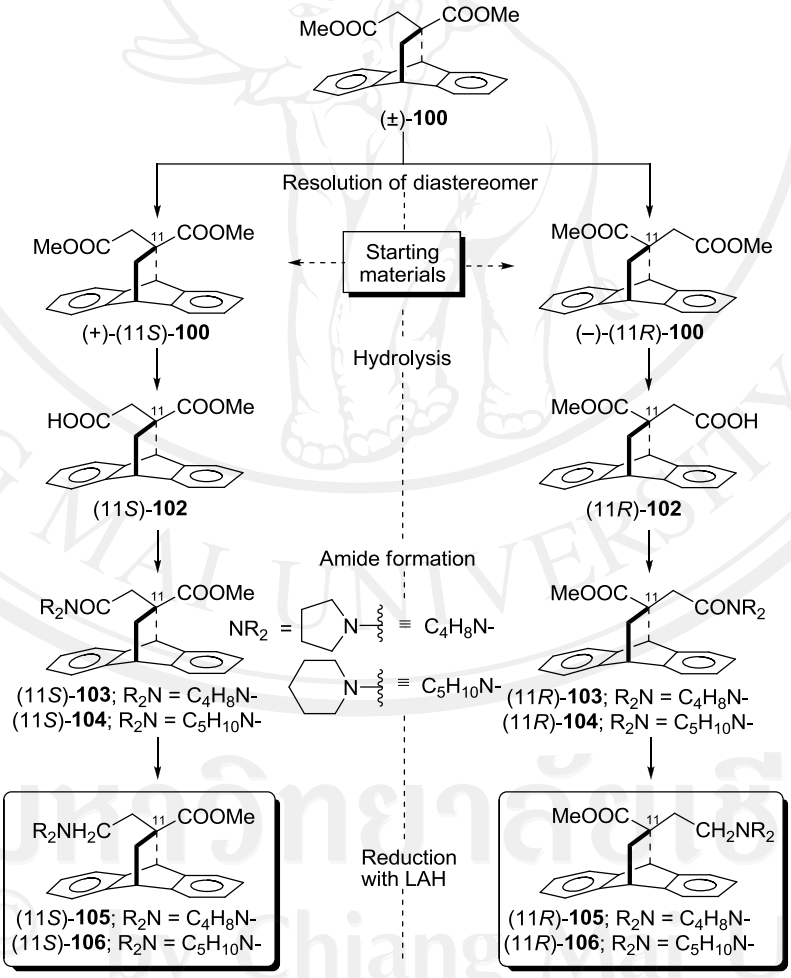
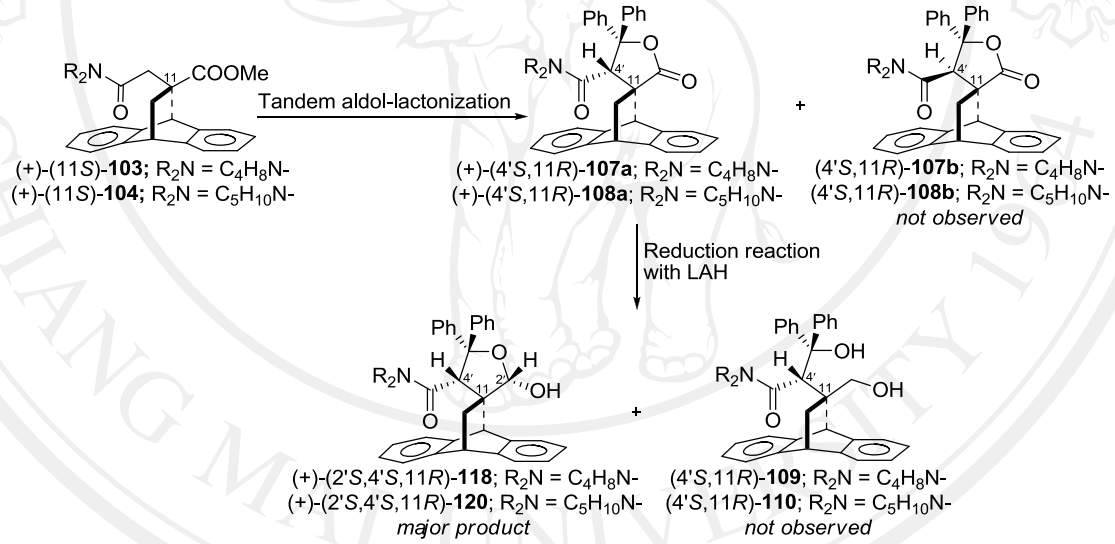
CHAPTER 4
CONCLUSION

Alternative chiral ligands, *N*,*O* heteroatoms TADDOLs–anthracene adducts (11*S*)-**105**, (11*R*)-**105**, (11*S*)-**106** and (11*R*)-**106** were successfully synthesized form enantiomerically pure dimethyl-itaconate anthracene adducts (+)-(11*S*)-**100** and (–)-(11*R*)-**100** as starting material *via* hydrolysis, amide formation and reduction reaction with Lithium aluminium hydride (LAH) as the key steps, respectively.



Scheme 34 Total synthesis of *N*,*O* heteroatoms TADDOLs–anthracene adducts (11*S*)-**105**, (11*R*)-**105**, (11*S*)-**106** and (11*R*)-**106**.

After that, the amide–anthracene adducts (+)-(11*S*)-**103** and (+)-(11*S*)-**104** were used as starting materials for synthesis of the *N*,*O* heteroatoms TADDOLs–anthracene adducts (4′*S*,11*R*)-**109** and (4′*S*,11*R*)-**110** *via* tandem aldol–lactonization reaction and reduction reaction, respectively. In the step of tandem aldol–lactonization reactions were successful to give amide spiro–lactone anthracene adducts (+)-(4′*S*,11*R*)-**107a** and (+)-(4′*S*,11*R*)-**108a**. On the other hand, the reduction reactions of amide spiro–lactone anthracene adducts (+)-(4′*S*,11*R*)-**107a** and (+)-(4′*S*,11*R*)-**108a** with lithium aluminium hydride (LAH) were not obtained the *N*,*O* heteroatoms TADDOLs–anthracene adducts (4′*S*,11*R*)-**109** and (4′*S*,11*R*)-**110** but these reactions gave the adducts (+)-(2′*S*,4′*S*,11*R*)-**118** and (+)-(2′*S*,4′*S*,11*R*)-**120** as major products. Also, the adducts (4′*S*,11*R*)-**109** and (4′*S*,11*R*)-**110** can be not synthesize *via* these conditions.



Scheme 35 Studying of synthetic *N*,*O* heteroatoms TADDOLs–anthracene adducts (4′*S*,11*R*)-**109** and (4′*S*,11*R*)-**110**.