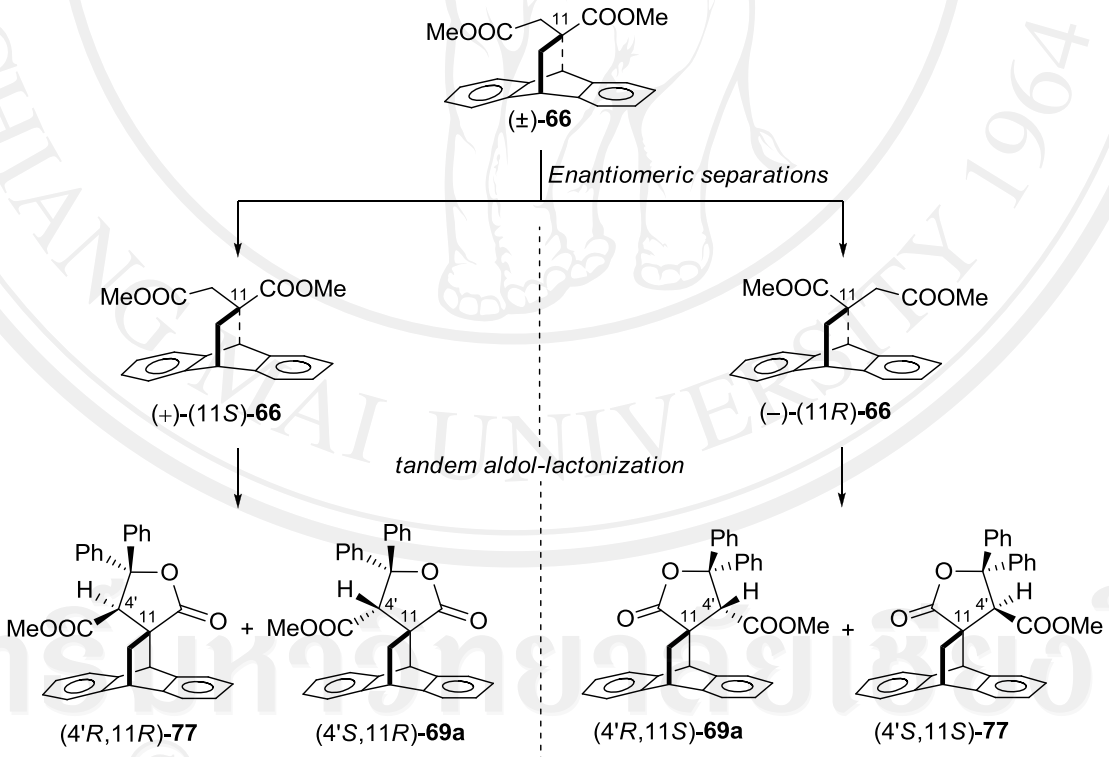
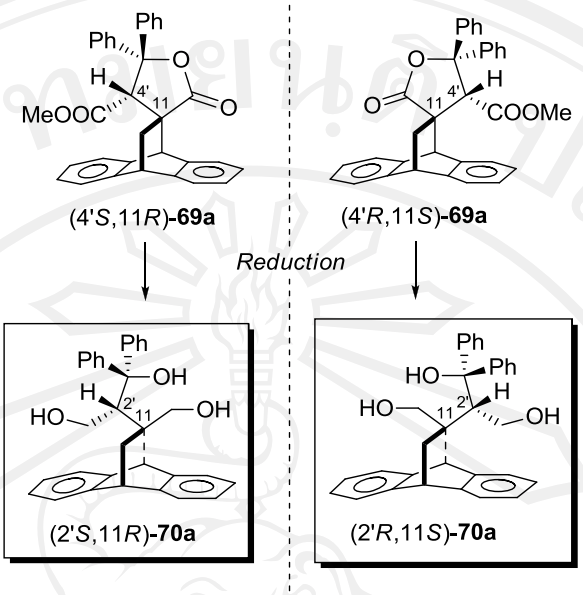
CHAPTER 4

CONCLUSION

The one application of using the optically active dimethyl itaconate–anthracene adducts is synthesis the enantiomeric TADDOL–anthracene catalysts (2′*S*,11*R*)-**70a** and (2′*R*,11*S*)-**70a**. The reaction was successfully synthesized *via* tandem aldol–lactonization and reduction reactions as the key steps which obtained those catalysts in moderate yield (Scheme 33).

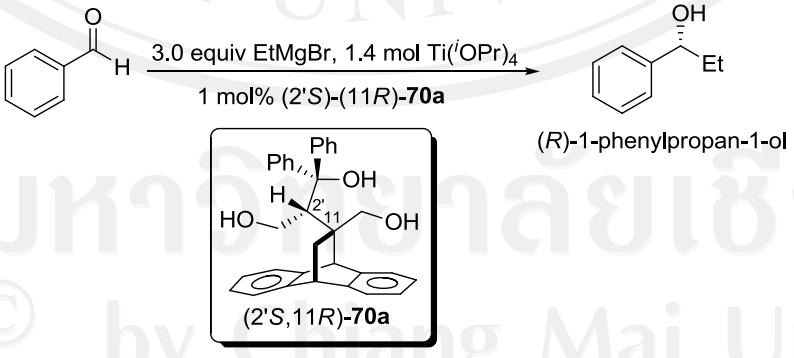


Scheme 33 Total synthesis of TADDOL–anthracene adducts (2′*S*,11*R*)-**70a** and (2′*R*,11*S*)-**70a**.



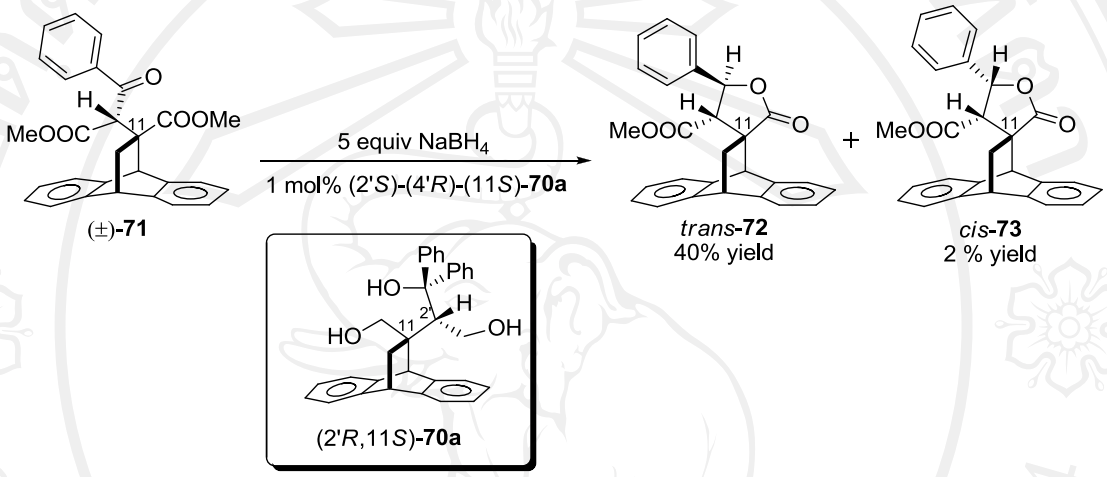
Scheme 33 Total synthesis of TADDOL–anthracene adducts (2′*S*,11*R*)-**70a** and (2′*R*,11*S*)-**70a** (continued).

Using TADDOL–anthracene adduct (2′*S*,11*R*)-**70a** as the model catalyst and Ti(^{i}OPr)$_4$ in the catalysis of 1,2-addition reaction of benzaldehyde with EtMgBr was investigated. The result found that addition of 1 mol% of catalyst [(2′*S*,11*R*)-**70a**] and 1.4 mol of Ti(^{i}OPr)$_4$ as additive did not have any effect in terms of increasing percentage of enantioselectivity and yield (Scheme 30).



Scheme 34 1,2-addition of benzaldehyde and EtMgBr with 1 mol% of TADDOL–anthracene adducts (2′*S*,11*R*)-**70a** and Ti(^{i}OPr)$_4$.

The next investigation, effect of both forms of TADDOL–anthracene adducts (2′*S*,11*R*)-**70a** and (2′*R*,11*S*)-**70a** in *β*-keto ester reduction were studied. The result indicated that at 1 mol% of TADDOL–anthracene catalyst (2′*R*,11*S*)-**70a** gave the highest diastereoselectivity in ratio of *trans*:*cis* = 95:5 as depicted in Scheme 31.



Scheme 35 The *β*-keto ester reduction with 1 mol% of TADDOL–anthracene adducts (2′*R*,11*S*)-**70a**.