

NEW CHIRAL DIAMINE: APPLICATION TOWARD THE SYNTHESIS OF MOLECULES OF PHARMACEUTICAL INTEREST.

Nouvelles diamines chirales : Application en synthèse de molécules d'intérêt pharmaceutique.

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Context: The pharmaceutical industry needs original and efficient methodologies allowing the synthesis of biological active molecules. A large portion of the drug marketed contains, at least, a chiral center in their structure. The generation of new chiral centers with a determined stereochemistry is still a challenge in organic chemistry. Among the different pathways to obtain enantiopure compounds, the asymmetric catalysis collects more advantages. Chiral diamines are important building blocks for the construction of stereoselective catalysts, including transition metal based catalysts and organocatalysts that facilitate oxidation, reduction, hydrolysis, and C-C bond forming reactions.¹

Ph.D. Project: Our group has recently reported the use of chiral diamines as catalyst scaffolds in the asymmetric Henry reaction catalyzed by copper and the asymmetric transfer hydrogenation reactions catalyzed by iridium.² In this project, we propose to develop original chiral diamines. In one hand their efficiency as organocatalyst will be evaluated in the cyclisation of citronellal into hydroxymenthol. In another hand, iron complex will be prepared. Their use in late-stage oxidation will be studied. As an example of application the oxidation of Artemisinin which possess antimalarial activity will be tested (Figure 1).³

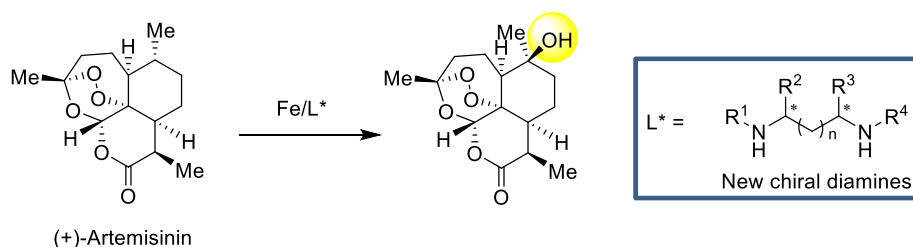


Figure 1. (+)-Artemisinin and new chiral ligands structures.

¹ Soon M. S.; Leo, M.; Hyunwoo, K; Jik, C. *Accounts of Chemical Research*. **2012**, *45*, 1345-1355.

² (a) El-Assad, B.; Métay, E.; Karamé, I.; Lemaire, M. *Molecular Catalysis*, **2017**, *435*, 76-81. ; (b) El-Assad, B.; Guicheret, B.; Métay, E.; Karamé, I.; Lemaire, M. *Journal of Molecular Catalysis A: Chemical*, **2016**, *411*, 196-202.

³ White, M. C.; Zhao, J. *J. Am. Chem. Soc.*, **2018**, *140*, 13988-14009.