EASTERN MICHIGAN UNIVERSITY

Chemistry Department

M. S. Thesis Seminar

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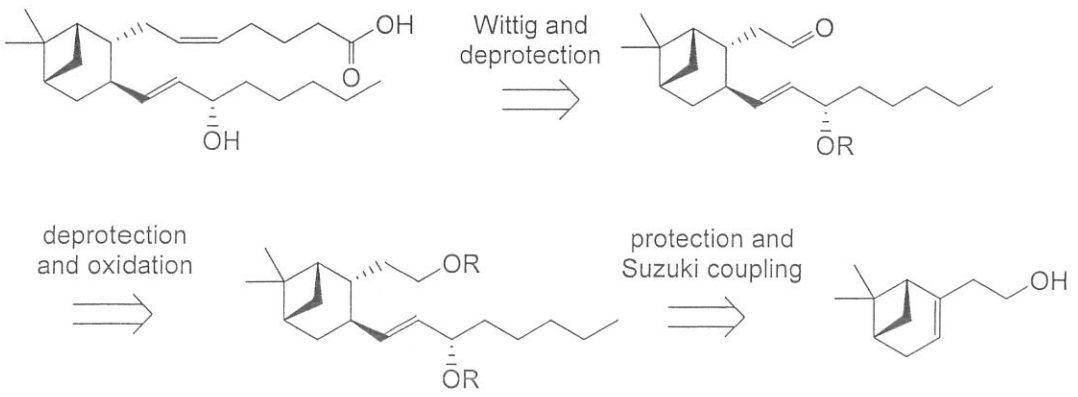
Synthesis of pinane thromboxane A2 via Suzuki-Miyaura coupling

ABSTRACT

In 1975, Hamberg and associates [1] discovered human platelets transform arachidonic acid into prostaglandin endoperoxides then further into thromboxane B2 forming the unstable intermediate thromboxane A2. Pinane thromboxane A2 is a stable analog of the unstable thromboxane A2 [2]. Its antithrombotic activity includes the inhibition of platelet aggregation, artery constriction, and thromboxane synthetase [2] and the contraction of induced stomach muscle [3].

This project focuses on the synthesis of pinane thromboxane A2 via a Suzuki-Miyaura coupling. Advantages of this route include the first example of the use of the Suzuki coupling with this compound, fewer steps within the synthesis and the use of non-toxic chemicals. Accomplishing the Suzuki-Miyaura coupling has proven to be the greatest challenge and will be described in detail (**Scheme**).

Scheme



1. Hamberg, M.; Svensson, J.; Samuelsson, B. *Proc. Nat. Acad. Sci. USA* **1975**, *72*, 2994.
2. Nicolaou, K.C.; Magolda, R.L.; Smith, J.B.; Aharony, D.; Smith, E.F.; Lefer, A.M. *Proc. Natl. Acad. Sci. USA* **1979**, *76*, 2566.
3. Bennett, A.; Sanger, G.J. *Br. J. Pharmac.* **1982**, *77*, 591.