

UNIVERSITY TEKNOLOGI MARA

**SYNTHESIS OF 12-BENZYLOXY-3,4-
DIMETHOXY-13-METHYLSTILBENE AND 12-
ACETOXY-3,4-DIMETHOXY-13-
METHYLSTILBENE**

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ABSTRACT

This research project aims to synthesize a stillbene analogues, 12-benzyloxy-3,4-dimethoxy-13-methylstilbene and 12-acetoxy-3,4-dimethoxy-13-stillbene via series of reactions. This study was carried out in four establish reactions. Firstly, the protection of hydroxyl group of 4-iodophenol, 1 by benzylation and acetylation producing 4-iodo-2-methylphenylbenzylether, 2 and 4-iodo-2-methylphenylacetate, 3. Then, the product from both reaction is used to synthesize the desired compound, 12-benzyloxy-3,4-dimethoxy-13-methylstilbene, 5 and 12-acetoxy-3,4-dimethoxy-13-stillbene, 6 by Heck reaction involving the utilization of paladium (II) catalyst, triphenylphosphine ligand, argentum nitrate, potassium acetate and dimethylformamide solvent. The products were purified by chromatographic technique using thin layer chromatography plate and Prep thin layer chromatography. NMR characterization also had been used in the determination of the structure. The reaction was succesful as both the tentative compound was successfully obtained. 12-benzyloxy-3,4-dimethoxy-13-methylstilbene, 5 and 12-acetoxy-3,4-dimethoxy-13-stillbene, 6 has been synthesized in small amount (20.25% and 26.54% respectively).

CHAPTER 1

INTRODUCTION

1.1 Stilbenes

Stilbenoids are small molecular weight (~200-300 g/mol), naturally occurring compound produced by plant as a protective agent. Stilbenoids possesses many therapeutic values especially its remarkably anticancer, anti-inflammatory and anti-oxidant properties.

Because of these, stilbenoids have become the compound of interest to be synthesized and investigated among researchers. One of the methods to synthesize stilbenoids is via Heck reaction. Heck reaction is a Palladium catalyzed C-C coupling of an aryl halide with an olefin under the appropriate conditions. The first example of such a reaction was discovered in 1971 by Mizoroki (Wikipedia).

1.2 Significance of Study

This study is very important to synthesize stilbenoid and their derivatization via a series of reaction according to a developed theoretical scheme. Steps involved are first, the protection of 4-iodo-2-methylphenol, **1** with benzyl bromide and acetic anhydride. Second, the products of both protection reactions is coupling with 3,4-dimethoxystyrene, **4** via the Heck reaction. Third, Thin Layer Chromatography (TLC) is used to observe the completion of reaction as well as to check the purity of compound. Next, the