

UNIVERSITI TEKNOLOGI MARA

**SYNTHESIS OF 3,5-DIACETOXY-12-
BENZYLOXYSTILBENE**

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ABSTRACT

A large number of stilbene derivatives which have been widely known for various therapeutic values have been isolated from various plants. Nevertheless, only a minute amount of them can be obtained naturally. Therefore the synthesis of its derivatives can provide access to unnatural analogues as well as enabling further studies on their structure-activity relationships. The aim of the research was to produce a stilbene derivative, 3,5-diacetoxy-12-benzyletherstilbene to be used by other researches for synthesis of more complex compounds and further investigation on structure-activity relationships. The preparation of the compound has been performed through four established reactions. The first reaction was the synthesis of protected iodophenol to be used as a starting material for Heck coupling. The second reaction involved synthesis of protected 3,5-dihydroxybenzaldehyde to be used as a starting material in the Wittig reaction. Both protected compounds were successfully synthesized and extracted. Next the Wittig reaction was performed to synthesize 3,5-diacetoxystyrene as another starting material for Heck coupling. However, the reaction failed to produce the desired styrene. To execute the final reaction, 3,5-dimethoxystyrene, synthesized and donated by another researcher, was used as a replacement of 3,5-diacetoxystyrene. Heck coupling was performed but failed to produce the desired stilbene. In each reaction, the products were analyzed using TLC and extracted using ethyl acetate or hexane. In the Wittig reaction and Heck coupling, the reaction products were attempted to be purified by column chromatography but separation did not occur. Each compound was sent for NMR analysis for structure characterization. The spectra were recorded using ^1H -NMR spectrometer in order to elucidate the structure of the compounds.

CHAPTER 1

INTRODUCTION

Stilbenoids form one minor class of phenolic compounds in plants which has a basic skeleton of $C_6 - C_2 - C_6$ 1. A large number of derivatives have been isolated from various plants. Nevertheless, only a minute amount of them can be obtained from these natural sources. For this reason, the need of synthesizing stilbene derivatives is important in enabling further investigation on their structure-activity relationships as well as providing opportunity to access to unnatural analogues.

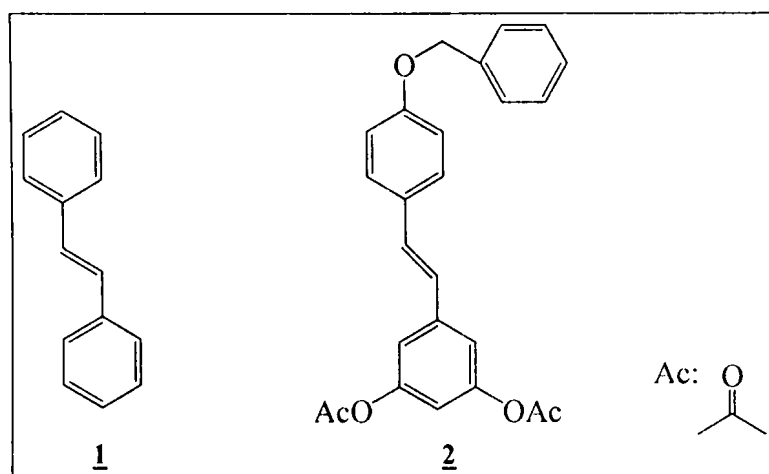


Figure 1.1: Structures of stilbene skeleton 1 and compound to be synthesized 2

The main objective this research was to synthesize large quantities (gramme scale) of stilbene derivative, 3,5-diacetoxy-12-benzyloxystilbene 2. The compound was to be synthesized through four established reactions, purified by standard chromatographic techniques and characterized by spectroscopic techniques. The obtained 2 will be used