

UNIVERSITI TEKNOLOGI MARA

**SYNTHESIS OF *TRANS*-3,4-DIMETHOXY-11-
BENZYLOXYSTILBENE**

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ABSTRACT

Currently, among the lead compounds studied in search for more potent drugs with few or no side effects, stilbene outstands for its promising therapeutic value. Various stilbene analogues have been studied for their chemical and biological properties. Catalytic Mizoroki-Heck reaction is claimed among the prominent approaches to synthesise stilbene. However, isomers are reported to form. Thus, regioselectivity become the concern of most studies. With appropriate reaction condition, regioselectivity is claimed achievable. Preformed active species of Pd is claimed preferable rather than attempting to generate active species in situ. This study is carried out to synthesise a stilbene analogue, *trans*-3,4-dimethoxy-11-benzyloxystilbene **1** using Heck reaction with several reaction conditions and to observe effect of using preformed Pd(0) and in situ Pd(II) on yield of **1**. **1** was characterised using spectroscopy method (IR and NMR). Melting point of **1** was also determined. All reaction conditions chosen were appropriate to synthesise **1**. However, valid comparison between the yield of generated active species in situ and preformed active species from a Pd(0) or Pd(II) source cannot be compared. This is because the quantification method chosen are inappropriate. Thus, it is concluded that not only appropriate reaction condition is needed for regioselectivity, but appropriate quantification method also needs to be considered.

CHAPTER 1

INTRODUCTION

1.1 Stilbene Description

The word 'stilbene' originates from the Greek word '*stilbein*' and '*ēnos*'. '*Stilbein*' means to glitter or shining whilst -ene originate from '*ēnos*' is suffix for names of unsaturated hydrocarbons containing a double bond (Oxford University Press, 1998).

As its meaning, stilbene, an ethene with two phenyl groups on either carbon of the parent chain, is a synthetic aromatic hydrocarbon which forms phosphorescent crystals (Oxford University Press, 1998). The ability of stilbene to fluoresce was due to its fluorescence, the emission of electromagnetic radiation of stilbene after initial absorption of photon by the stilbene conjugated unsaturated hydrocarbon atoms. Thus, this gives the photo-sensitivity property of stilbene (Chang, 2002; Solomons and Fryhle, 2002).

1.2 Stilbene Synthesis

Currently, in pharmaceutical industry or arena, extensive research and development of therapeutics were concerned in search for more potent drugs with few or no side effects.