

**SYNTHESIS AND CHARACTERIZATION OF
NAPTHOQUINONE DERIVATIVES WITH SOME STUDIES
ON FORMATION OF PYRIDINIUM SALT**

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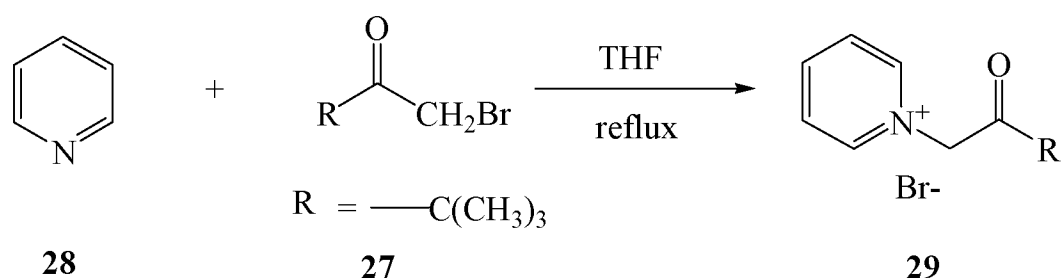
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ABSTRACT

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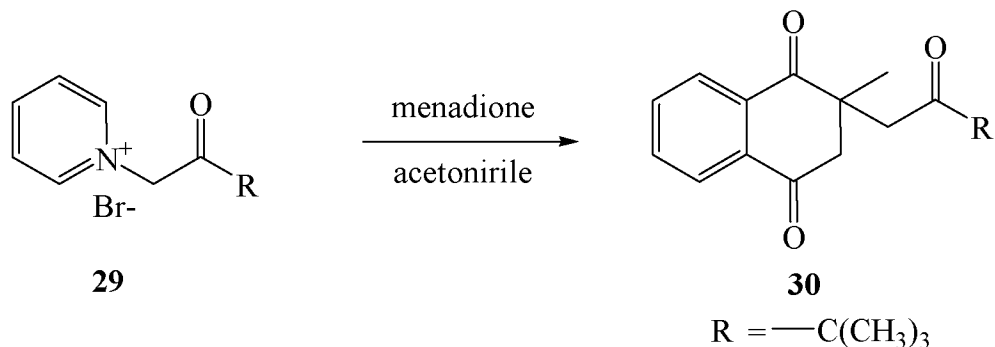
The pyridinium salt **29** was prepared from 1-bromopinacolone refluxed with pyridine and tetrahydrofuran as solvent. The rate of formation of pyridinium salt according to different refluxing time was studied.



Different refluxing time give effects on percent yield of pyridinium salt. Increase in refluxing time give an increase in percent yield. The rate is exponential proportional to the refluxing time. There was possibility of optimum refluxing time in this reaction, but this possibility cannot be further study due to time limitation and limited starting material. The stirring with heating gave higher percent yield compared to stirring without heating.

The pyridinium salt was obtained in the form of white crystal about 6.4744g. The percent yield of this salt is 96.67%. The FTIR and NMR analysis was carried out and confirmed the structure of salt.

The pyridinium salt obtained was stirred with 2-methyl-1,4 naphthoquinone and acetonitrile as solvent. The reaction between 2-methyl-1,4 naphthoquinone (naphthoquinone derivatives) with pyridinium salt was studied. The product was obtained in the form of fine red needles in 0.3268 g (26%).



CHAPTER 1

INTRODUCTION

1.1 Background of study

Naphthoquinone derivatives merit study due to fact that they have great potential as novel pharmaceuticals. An example of which is Plumbagin. It is isolated from the roots of *plumbago zeylannica L* and works as an inhibitor of growth unwanted cell and against invasive of prostate cancer. (Evans C.P., 2008)

Recent innovative application of naphthoquinone derivatives has been to control the activity of protein kinesis in cells. Naphthoquinone derivatives were being use in pharmaceutical compositions, especially for treating cardiovascular disorders and malignancies. (Anon, 2006)

According to Francisco *et al.* (2008), the biological activity is related to the ability of quinones to accept one or two electrons to form highly reactive radical anion intermediates, which are responsible for some of the oxidative stresses observed in cells. Naphthoquinone derivatives may also exhibit other genotoxic properties such as DNA intercalation or alkylation of DNA that might also contribute to cytotoxicity.