

Condensation of warfarin with alcohols in dry media under microwave irradiation (Part-1)

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ABSTRACT

Warfarin acetals are synthesized by intra cyclodehydration reaction in presence of Mont. KSF clay in good yields under microwave irradiation.

Keywords: Warfarin, methanol, Mont. KSF clay, microwave.

INTRODUCTION

The acetals (cyclic or acyclic) are prepared by using a variety of catalyst such as p-toluenesulphonic acid (TsOH)¹, Me₃SiCl², TBAF³ etc. which requires longer reaction times (1-16 hours), low yield and tedious work up. but they occupy a special place in the realm of natural and synthetic organic chemistry owing to their useful and diverse biological activities as molluscicidal⁴, antihelminthic, hypnotic, insecticidal⁵, anticoagulant properties⁶, and fluorescent brighteners⁷. Now, there is a need of environmentally an alternate new technique to increase the product yield, safety and decrease in reaction time.

We became interested in exploring a new method which require lower reaction time, give high yield with purity using environmentally benign heterogeneous Mont. KSF catalyst. The Mont. KSF clay has been used as a catalyst for a number of organic reactions and offer several advantages over classical acids i.e strong acidity, non-corrosive properties, cheapness, mild reaction conditions, high yields, selectivity and the ease of set up and

works up⁸. Further, the organic reaction under microwaves give good yield in a few minutes along with product purity and safety⁹.

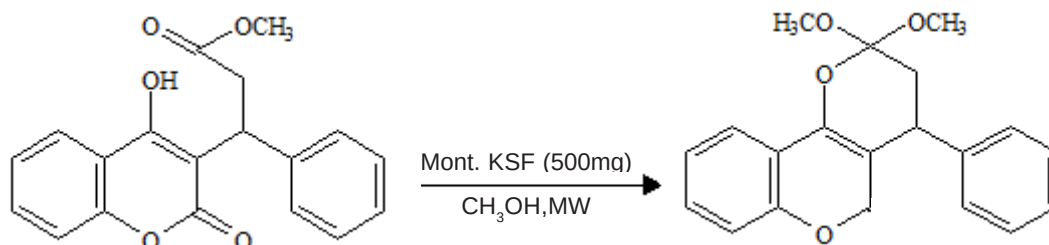
We now report the cyclisation reaction in between warfarin and methanol in presence of Mont. KSF as catalyst under microwave ir-radiation give corresponding warfarin acetals in a few minutes (scheme-1). The product is crystallized by methanol give 92% yield. The product was identified on the basis of ¹H-NMR, IR and by comparison of their R_f values with those of authentic samples prepared by standard routes.

Conclusion

We have investigated that warfarin acetals can be prepared more quickly in high yield in shorter reaction time in presence of Mont. KSF catalyst under microwave ir-radiation.

EXPERIMENTAL

In a typical procedure, Warfarin (1 mmole), methanol (5ml) and Mont. KSF catalyst (500 mg) was irradiated for 5 minutes at 70% power level



Scheme - 1

(560 W) in an unmodified domestic microwave oven operating at 2450 MHz. The product was extracted with methanol (2X15ml). The crude product was purified by crystallization from methanol. Colour: white; Melting point: 166°C; $^1\text{H-NMR}$ (δ in ppm in CDCl_3): 1.47(3H, s, CH_3), 2.25-2.32(2H, C-3), 3.17(3H, s, OCH_3), 4.15(H, dd, C-10) and IR (KBr, cm^{-1}): 1708,

1625, 1611, 1493, 1380, 1140, 1100 1050, 730 and 690 cm^{-1} .

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