Synthesis of 4-phenyl-thiazolyl substituted Schiff bases

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ABSTRACT

The present research has systematic approach to synthesized a series of 4-phenyl-thiazolyl substituted Schiff bases (3a-c) derivatives by the action of substituted aromatic aldehydes (2a-c) with 2-amino 4- phenyl thiazole. Structures of all the synthesized compounds were confirmed by their IR, 1H-NMR.
Keywords: Schiff's base; aromatic aldehydes; 2- amino 4- phenyl thiazole.

INTRODUCTION

Thiazole derivatives have played a crucial role in medicinal chemistry. Thiazoles flaunt a wide range of biological activities like antimicrobial[1-4], analgesic[6-7], anticonvulsant[8-9], antioxidant[10], hypolipidemic[11], anti-HIV-1[12-13], adenosine receptor antagonist[14-15], osteoporosis inhibitor[16].

Schiff bases have been shown to be interesting moieties for the design of antimalarial agents[17-18]. Schiff bases have been pointed to as promising antibacterial agents[19-21]. The search and developmentof more effective antifungal agents are mandatory and some Schiff bases are known to be promising antifungal agents[22].

EXPERIMENTAL SECTION

General Conditions: Melting points are uncorrected and were determined in open capillary tubes in. TLC was performed on silica gel-G and spotting was done using iodine. IR spectra were recorded on Nicolet 5ZDXFT-IR spectrometer in KBr phase and 1HNMR on Brucker WP 200 and 500 SY.

General procedure for the preparation of [(3-chloro-benzylidiene)-4-phenyl-thiazole-2-yl)-amine](3a)

A mixture of (0.001mole) 2- amino 4- phenyl thiazole and 0.70gm of 3- chlorobenzaldehyde in ethanol in presence of HCl was refluxed for 3-4 hours. The resulting solid was filtered, washed and recrystalised from ethanol to yield the product,m.p.-150-154^{0}C.

3a: IR (KBr):1575 cm-1 (C=N); ^{1}HNMR:δ 2.6 (s,1H, CH_3), 7.2-8.7 (m, 10H, Ar-H)

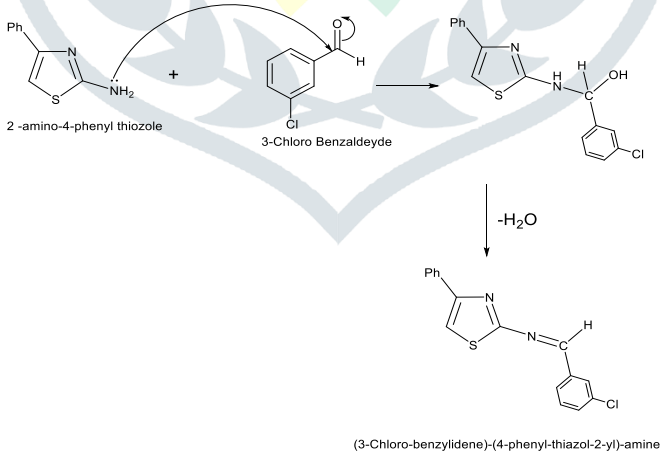
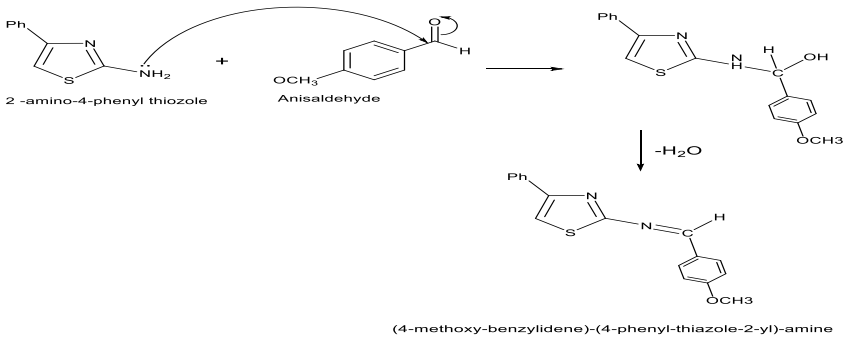


Fig: synthesis of [(3-chloro-benzylidiene)-4-phenyl-thiazole-2-yl)-amine]

General procedure for the Synthesis of[(4-methoxy-benzylidene)-4-phenyl thiazole-2-yl)amine](3b)

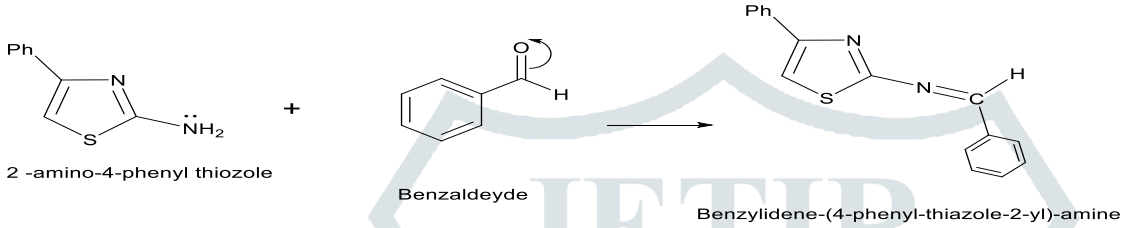
A mixture of (0.001mole) 2- amino 4- phenyl thiazole and 1.36 ml of anisaldehyde in ethanol in presence of HCl was refluxed for 3-4 hours. The resulting solid was filtered, washed and recrystalised from ethanol to yield the product,m.p.-120-123^{0}C.

3b: IR (KBr):3194(Ar-H),1608(C=N),1473(C=C)cm-1; ^{1}HNMR: δ 2.6(s,OCH_3), δ 6-7.8 (10H Ar H).



General procedure for the Synthesis of [Benzylidene-(4-phenyl-thiazole-2-yl)-amine](3c).

A mixture of (0.001mole) 2- amino 4- phenyl thiazole and 0.70gm of 3 chlorobenzaldehyde in ethanol in presence of HCl was refluxed for 3-4 hours. The resulting solid was filtered, washed and recrystalised from ethanol to yield the product,m.p. = 110-120˚c,Yield = 74%.



RESULTS AND DISCUSSION

From the above review, it can be said that Schiff bases derivatives display a wide range of pharmacological activities, such as antimalarial, anticancer, antiprotozoal, anti-inflammatory, antibacterial,antifungal. In conclusion, we described an efficient – protocol for synthesized compounds in good yields from aromatic aldehydes. The synthesized compounds were characterized by melting point, IR spectroscopy, Elemental analysis. The results obtained from this study confirmed that the product has formed. Hence forth viewing these characteristic properties more compounds can be synthesized and subjected to pharmacological evaluation.

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