Summary

Because trisubstituted pyrimidines, condensed pyrimidines and non-condensed ones have proved a great importance in pharmaceutical chemistry, medicinal chemistry and therapeutic applications, this work describes a facile synthesis of such compounds *via* the widely common method, ***Pinner synthesis***. It involves the synthesis of 2-mercaptopyrimidine derivative **2** via the reaction of *N*-{4-[3-(4-chlorophenyl)prop-2-enoyl]phenyl}benzamide (**1**) with thiourea in ethanolic solution of sodium ethoxide.

The behavior of 2-mercaptopyrimidine derivative **2** towards some nitrogen nucleophiles (hydrazine hydrate, anthranilic acid, *o*-phenylendiamine and piperidine) and some electrophiles (acrylonitrile, chloroacetic acid, β-aroylacrylic acid and ethyl chloroacetate) has been investigated.

Thus, the reaction of pyrimidine-2-thione derivative **2** with hydrazine hydrate gave the corresponding hydrazinopyrimidine **3**. Pyrimido[2,1-b]-quinazolinone **4** was synthesized through the reaction of 2-mercapto-pyrimidine derivative **2** with anthranilic acid. Also, pyrimidine-2-thione derivative **2** was reacted with *o*-phenylendiamine and afforded pyrimido-[1,2-a]benzimidazole **5**. The non-condensed 2-(piperidin-1-yl)pyrimidine derivative **6** was formed by the reaction of 2-mercaptopyrimidine **2** with piperidine.

On the other hand, the reaction of pyrimidine-2-thione **2** with acrylonitrile gave 2-[(β-cyanoethyl)thio]pyrimidine derivative **7**, While the reaction with chloroacetic acid furnished [(pyrimidin-2-yl)thio]acetic acid derivative **8**. Pyrimidine-2-thione **2** was reacted with 3-(4-bromobenzoyl)-acrylic acid in an addition reaction and gave 4-oxobutanoic acid derivative **9**.

However, the reaction of 2-mercaptopyrimidine **2** with ethyl chloroacetate afforded the corresponding ester **10**, which was reacted with hydrazine hydrate and gave the corresponding hydrazide **11**. The hydrazide **11** was reacted with active methylene group containing compounds namely; acetylacetone and ethyl acetoacetate and yielded pyrazolylpyrimidine derivatives **12** and **13** respectively. Also, the reaction of hydrazide **11** with *p*-toulic acid in $POCl_3$ furnished oxadiazolylpyrimidine derivative **14**.

2-Hydrazinopyrimidine **3** was used as a precursor for the synthesis of condensed and non-condensed pyrimidines. Thus, the reaction 2-hydrazino-pyrimidine **3** with acetylacetone gave 2-(pyrazol-1-yl)pyrimidine derivative **15**. While, the reaction of 2-hydrazinopyrimidine **3** with aliphatic carboxylic acid namely; formic acid and acetic acid afforded the fused analogues, triazolo[4,3-a]pyrimidines **16a** and **16b** respectively. (Pyimidin-2-yl)-phthalazine-1,4-dione derivative **17** was synthesized by the reaction of 2-hydrazinopyrimidine **3** with phthalic anhydride. Also, 2-hydrazino-pyrimidine **3** was reacted with carbon disulphide and gave triazolo[4,3-a]-pyrimidine-3(2*H*)-thione derivative **18**. Finally, condensation of 2-hydrazino-pyrimidine **3** with *p*-hydroxybenzaldehyde afforded the Schiff's base *p*-hydroxybenzylidene hydrazone derivative **19**.

Structures of all synthesized compounds were established by:

1- Elemental analysis. 2- I.R spectra.

3- ^{1}HNMR spectra. 4- Mass spectra.

Some of the synthesized compounds were screened for their antimicrobial activities against some selected bacteria and fungi, and it was found that, most of these compounds have remarkable biological activity.