Pyrimidine and substances with fused pyrimidine ring such as purines, pteridines etc. play an important role in the biochemistry of life processes. The barbiturates and their sulphur analogues are also pyrimidine derivatives, which have gained importance in the pharmaceutical field because of the various interesting biological properties of this system.

Benzopyrano pyrimidine's viz 1,3-diaryl-5-(1',3'-diaryl-6-hydroxy-4'-oxo-1,2,3,4'-tetrahydro-2'-thioxo-5'-pyrimidinyl)-1,2,3,4'-tetrahydro-2-thioxo-4H-(1)-benzo pyrano (2,3-d)pyrimidine-4-one have been synthesised in one step involving the reaction of 1,3-diaryl thiobarbituric acids with salicylaldehyde in methanol in presence of hydrochloric acid.

The therapeutic actions of thiazoles directed attention towards their synthesis and investigation of the structure-activity relationships. A convenient synthesis of 1,3-diaryl-1,3-dihydro-2-thioxo-5-(2-mercaptotiazol-4-yl)-2H, 5H-pyrimidine-4, 6, diones and 1,3-diaryl-1, 3-dihydro-2-thioxo-5-(2-methylthiazol-4-yl) 2H, 5H-pyrimidine-4, 6-diones has been carried out. The method involves the reaction of 1,3-diaryl thiobarbituric acid with chloroacetyl chloride in presence of
triethylamine to give an intermediate which on further condensation with ammonium dithiocarbamate or thioacetamide in absolute ethanol gives the desired mercapto or methyl thiazoles respectively.

A number of pyrimido quinolines were synthesised by a convenient route. This involved the condensation of 6-chloro-1,3-diaryl-5-formyl - 2-thiouracil with N-methylaniline to give 5-hydroxy-1,3-diaryl, 1,2,3,4,5-pentahydro-10-methyl-4-oxo-2-thioxopyrimido (4,5-b) quinoline.

Redox coenzymes, specially flavins which contain pyrimidine ring, have become the subject of active research due to their ability to oxidise alcohols to the corresponding carbonyl compounds. Compounds like 5-arylidene and 5-alkylidene derivatives of pyrimidines having been employed for the synthesis of a number of physiologically active compounds, have also shown the potential towards nucleophilic attack suggesting their use as model compounds for redox coenzymes. Hence the synthesis of 5-arylidene thiobarbituric acids and 5-(pyrimidinyl) methylidene thiobarbituric acids have been undertaken, which involved the reaction of 1,3-diaryl thiobarbituric acids with benzaldehydes and 6-chloro-1,3-diaryl-5-formyl-2-thiouracils respectively.
This further led to the synthesis of 7,9-diaryl pyrano (2,3-d : 6,5-d) dipyrimidine-2 (1H), 8 (10H) dithioxo, 4(3H) 6(7H) dione by the condensation of 6-chloro-1,3-diaryl-5-formyl-2-thiouracil with unsubstituted thiobarbituric acids. It is likely that due to their structural similarities with well known redox coenzymes, these compounds may be used as model compounds for redox coenzymes.