Pyrimidines have chemical and biological importance, as the pyrimidine ring system has associated with the valuable pharmacological activity. The simple pyrimidine compounds were prepared by the cyclization of aliphatic raw materials. Polysubstituted Pyrimidines compound were synthesized from acyclic compounds in a similar manner to chemistry of the benzenoid. The NH₂CSNH₂ group act as an antithyroid compound, with the same actions and uses as thiouracil. Numerous derivative of NH₂CSNH₂ are valuable in the treatment of leprosy.

Mostly NH₂CSNH₂ derivatives show cytotoxic activity along with antithyroid activity. NH₂CSNH₂ also shows some anti-inflammatory, antimicrobial and antifungal activities. The diverse medicinal uses and biological activities of pyrimidine are reported earlier.

Polysubstituted Pyrimidines compound were synthesized from acyclic compounds in a similar manner to chemistry of the benzenoid. The NH₂CSNH₂ group act as an antithyroid compound, with the same actions and uses as thiouracil. Numerous derivative of NH₂CSNH₂ are valuable in the treatment of leprosy.

Here a series of thioxo tetrahydro pyrimidine derivatives are synthesized to evaluate their antibacterial and antifungal activities

Some Pyrimidines and its derivatives have been reported to process some interesting biological activities such as hypnotic properties (207).

Pyrimidines and their derivatives are used for thyroid drugs (208) and for leukemia and Vaccine infection.

The NH₂CSNH₂ group act as an antithyroid compound, with the same actions and uses as thiouracil.
Reactions:

Scheme – 3.1 Synthesis of 2-Thioxo-Tetrahydropyrimidine Derivatives

Where R as: (3a) -H (3b) 4- OCH₃ (3c) 2- OCH₃ (3d) 2- OH (3e) 2- Cl (3f) 4- Cl (3g) 2- NO₂ (3h) 3- Br (3i) 3,4- (OCH₃)₂ (3j) 3,4,5- (OCH₃)₂
EXPERIMENTAL:

(3a) PREPARATION OF 2-METHYL-5-NITRO-N-(4-(3-(6-PHENYL-2-THIOXO-1,2,5,6-TETRAHYDROPYRIMIDIN-4-YL)PHENOXY)PHENYL)BENZENE - SULFONAMIDE:

A blend of (E)-N-(4-(3-cinnamoylphenoxy)phenyl)-2-methyl-5-nitrobenezene sulfonamide (0.42 g, 0.001 mol) and NH₂CSNH₂ (0.08gm, 0.001 mol) in the presence of ethanol (30 ml) with concentrate Hydrochloric acid, heat the reaction mixture up to refluxing temperature for 12 hours taking proper safety care. Reaction Stuff was filtered when it was hot, let the reaction cooled and neutralized by using the solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.

(3b) N-(4-(3-(6-(4-METHOXYPHENYL)-2-THIOXO-1,2,5,6-TETRAHYDROPYRIMIDIN-4-YL)PHENOXY)PHENYL)-2-METHYL-5-NITROBENZENE - SULFONAMIDE:

A blend of (E)-N-(4-(3-(4-methoxyphenyl) acryloyl)phenoxy)phenyl)-2-methyl-5-nitrobenezenesulfonamide (0.44 g, 0.001 mol) and NH₂CSNH₂ (0.08gm, 0.001 mol) in the presence of ethanol (30 ml) and con. HCl (20 ml) was refluxed for 12 hours. The reaction blend was filtered when it was hot, let the reaction cooled and neutralized by using Sodium Hydrioxide. The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.

(3c) N-(4-(3-(6-(2-METHOXYPHENYL)-2-THIOXO-1,2,5,6-TETRAHYDROPYRIMIDIN-4-YL)PHENOXY)PHENYL)-2-METHYL-5-NITROBENZENE - SULFONAMIDE:

A blend of (E)-N-(4-(3-(2-methoxyphenyl)acryloyl)phenoxy)phenyl)-2-methyl-5-nitrobenezenesulfonamide (0.45 g, 0.001 mol) and NH₂CSNH₂ (0.08gm), in the presence of ethanol (30 ml) and con. HCl (20 ml) was refluxed for 12 hours. The reaction blend was filtered when it was hot, let the reaction cooled and neutralized by using The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.
in the presence of ethanol (30 ml.) with concentrate Hydrochloric acid, heat the reaction mixture up to refluxing temperature for 12 hours taking proper safety care. Reaction stuff was filtered when it was hot, let the reaction cooled and neutralized by using The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.

\[ (3d) \text{N-} (4-\text{3(6-(2-HYDROXYPHENYL)-2-THIOXO-1, 2,5,6-TETRAHYDRO-PYRIMIDIN-4-YL)PHENOXY)PHENYL)-2-METHYL-5-NITROBENZENE - SULFONAMIDE:} \]

A blend of \( \text{(E)-N-} (4-\text{3(3-(2-hydroxyphenyl)acryloyl)phenoxy)phenyl)-2-methyl-5-nitrobenzenesulfonamide (0.47 g, 0.001 mol) and NH}_2\text{CSNH}_2 (0.08 gm), \) in the presence of ethanol (30 ml.) with concentrate Hydrochloric acid, heat the reaction mixture up to refluxing temperature for 12 hours taking proper safety care. Reaction stuff was filtered when it was hot, let the reaction cooled and neutralized by using The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.

\[ (3e) \text{N-} (4-\text{3(3-(2-CHLOROPHENYL)-2-THIOXO-1,2,5,6-TETRAHYDRO-PYRIMIDIN-4-YL)PHENOXY)PHENYL)-2-METHYL-5-NITROBENZENE - SULFONAMIDE:} \]

A blend of \( \text{(E)-N-} (4-\text{3(3-(2-chlorophenyl)acryloyl)phenoxy)phenyl)-2-methyl-5-nitrobenzenesulfonamide (0.44 g, 0.001 mol) and NH}_2\text{CSNH}_2 (0.08 gm), \) in the presence of ethanol (30 ml.) with concentrate Hydrochloric acid, heat the reaction mixture up to refluxing temperature for 12 hours taking proper safety care. Reaction stuff was filtered when it was hot, let the reaction cooled and neutralized by using The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.

\[ (3f) \text{N-} (4-\text{3(6-(4-CHLOROPHENYL)-2-THIOXO-1,2,5,6-TETRAHYDRO-PYRIMIDIN-4-YL)PHENOXY)PHENYL)-2-METHYL-5-NITROBENZENE - SULFONAMIDE:} \]

A blend of \( \text{(E)-N-} (4-\text{3(3-(4-chlorophenyl)acryloyl)phenoxy)phenyl)-2-methyl-5-nitrobenzenesulfonamide (0.45 g, 0.001 mol) and NH}_2\text{CSNH}_2 (0.08 gm), \) in the presence of ethanol (30 ml.) with concentrate Hydrochloric acid, heat the reaction mixture up to refluxing temperature for 12 hours taking proper safety care. Reaction stuff was filtered when it was hot, let the reaction cooled and neutralized by using The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.
(3g) 2-METHYL-5-NITRO-N-(4-(3-(6-(2-NITROPHENYL)-2-thioxo-1,2,5,6-tetrahydroprymidin-4-yl)phenoxy)phenyl)benzene sulfonamide:

A blend of (E)-2-methyl-5-nitro-N-(4-(3-(2-nitrophenyl) acryloyl) phenoxy) phenyl) benzene sulfonamide (0.46 g, 0.001 mol ) and NH$_2$CSNH$_2$ (0.08 gm) in the presence of ethanol (30 ml.) with concentrate Hydrochloric acid , heat the reaction mixture up to refluxing temperature for 12 hours taking proper safety care . Reaction Stuff was filtered when it was hot, let the reaction cooled and neutralized by using The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.

(3h) N-(4-(3-(6-(3-BROMOPHENYL)-2-thioxo-1,2,5,6-tetrahydroprymidin-4-yl)phenoxy)phenyl)-2-methyl-5-nitrobenzenesulfonamide:

A blend of (E)-N-(4-(3-(3-(3-bromophenyl)acryloyl) phenoxy)phenyl)-2-methyl-5-nitrobenzenesulfonamide (0.44 g, 0.001 mol ) and NH$_2$CSNH$_2$ (0.08 gm) in the presence of ethanol (30 ml.) with concentrate Hydrochloric acid , heat the reaction mixture up to refluxing temperature for 12 hours taking proper safety care . Reaction Stuff was filtered when it was hot, let the reaction cooled and neutralized by using The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.

(3i) N-(4-(3-(6-(3,4-DIMETHOXYPHENYL)-2-thioxo-1,2,5,6-tetrahydroprymidin-4-yl)phenoxy)phenyl)-2-methyl-5-nitrobenzenesulfonamide:

A blend of (E)-N-(4-(3-(3,4-dimethoxyphenyl)acryloyl)phenoxy)phenyl)-2-methyl-5-nitrobenzenesulfonamide (0.44 g, 0.001 mol ) and NH$_2$CSNH$_2$ (0.08 gm) in the presence of ethanol (30 ml.) with concentrate Hydrochloric acid , heat the reaction mixture up to refluxing temperature for 12 hours taking proper safety care . Reaction Stuff was filtered when it was hot, let the reaction cooled and neutralized by using The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.
(3j) 2-METHYL-5-NITRO-N-(4-(3-(2-THIOXO-6-(3,4,5-TRIMETHOXYPHENYL)-1,2,5,6-TETRAHYDROPYRIMIDIN-4-YL)PHENOXY)PHENYL)BENZENE SULFONAMIDE:

A blend of (E)-2-methyl-5-nitro-N-(4-(3-(3,4,5-trimethoxyphenyl)acryloyl)phenoxy)phenyl)benzene sulfonamide (0.44 g, 0.001 mol) and \( \text{NH}_2\text{CSNH}_2 \) (0.08 gm) in the presence of ethanol (30 ml.) with concentrate Hydrochloric acid, heat the reaction mixture up to refluxing temperature for 12 hours taking proper safety care. Reaction Stuff was filtered when it was hot, let the reaction cooled and neutralized by using The solid product was completely washed with water and allows it to dry in oven and finally ethanol was used as a solvent for crystallization.
Table No – 3.1 Analytical Data of 2-Thioxo-Tetrahydropyrimidine Derivative

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<th>Molecular Formula</th>
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