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Synthesis of Novel Derivatives of Pyrimido[1,6-*a*]selenopheno[3,2-*d*]pyrimidine

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Introduction:

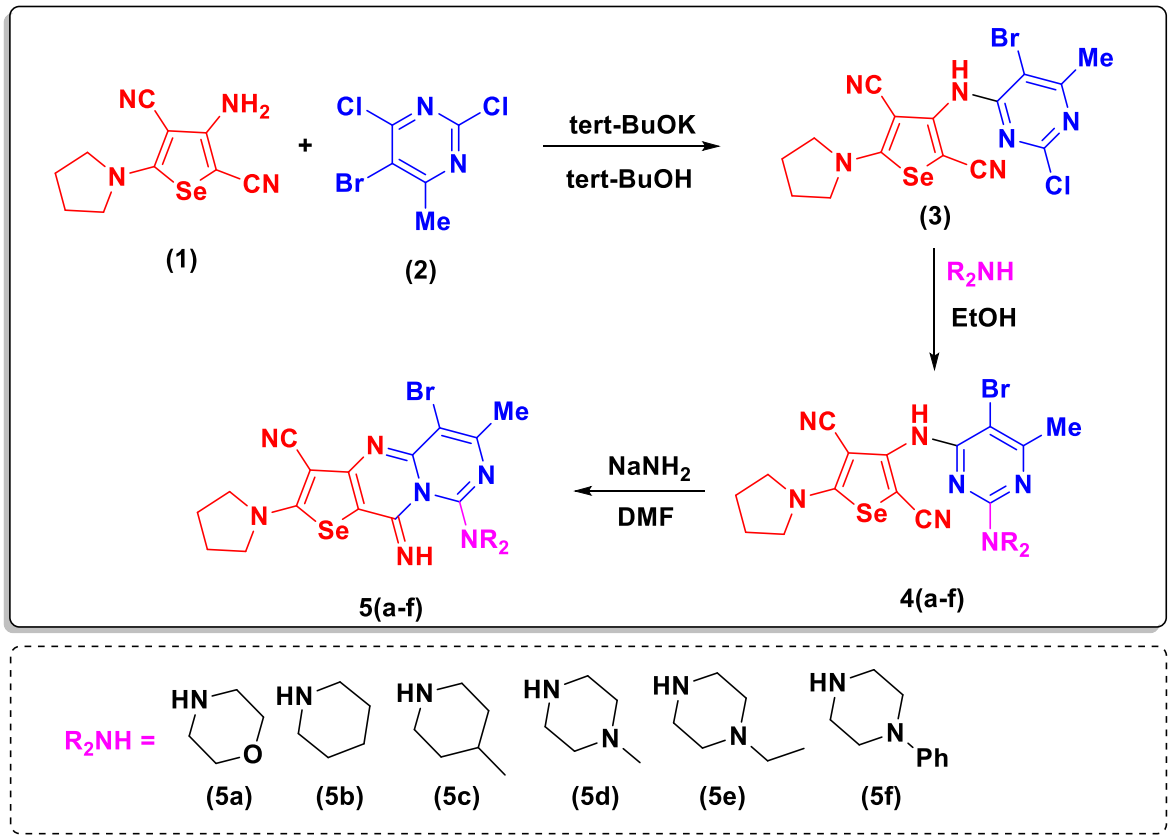
Selenophene and its derivatives are important heterocyclic compounds in medicinal chemistry due to their valuable pharmacological and biological activities such as antitumor [1], antibacterial [2], anticonvulsant [3], and antidepressant [4]. Selenophenopyrimidines are also another class of heterocyclic compounds with biological properties, particularly anticancer activity [5].

Method:

Initially, 3-amino-2,4-dicyano-5-(pyrrolidin-1-yl)selenophene **(1)** was treated with 5-bromo-2,4-dichloro-6-methylpyrimidine **(2)** in tert-butanol as solvent. Potassium tert-butoxide was added, and the mixture was heated under reflux conditions to prepare the corresponding compound **(3)**. Then, compound **(3)** was reacted with different secondary amines in ethanol to form compounds **4(a-f)**. Eventually, the former compounds **4(a-f)** were treated with sodiumamide in DMF to obtain the corresponding cyclic products **5(a-f)** in good yields.

Results and discussion:

Our approach is based on using compound **(1)** as the starting material that was obtained via our previously published method [5]. In order to synthesize a novel heterocyclic system, compound **(1)** was reacted with 5-bromo-2,4-dichloro-6-methylpyrimidine **(2)** as a dielectrophile in the presence of t-BuOK/t-BuOH to give product **(3)**. (Scheme 1) The IR spectrum as well as the ^{1}H NMR and ^{13}C NMR spectra revealed the formation of an uncyclized product. The occurrence of heterocyclizations was performed after the substitution of chlorine atoms with appropriate secondary amines through nucleophilic aromatic substitutions and then treatment with sodium amide as a strong base to prepare the potential pharmacologically active compounds **5(a-f)**.



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