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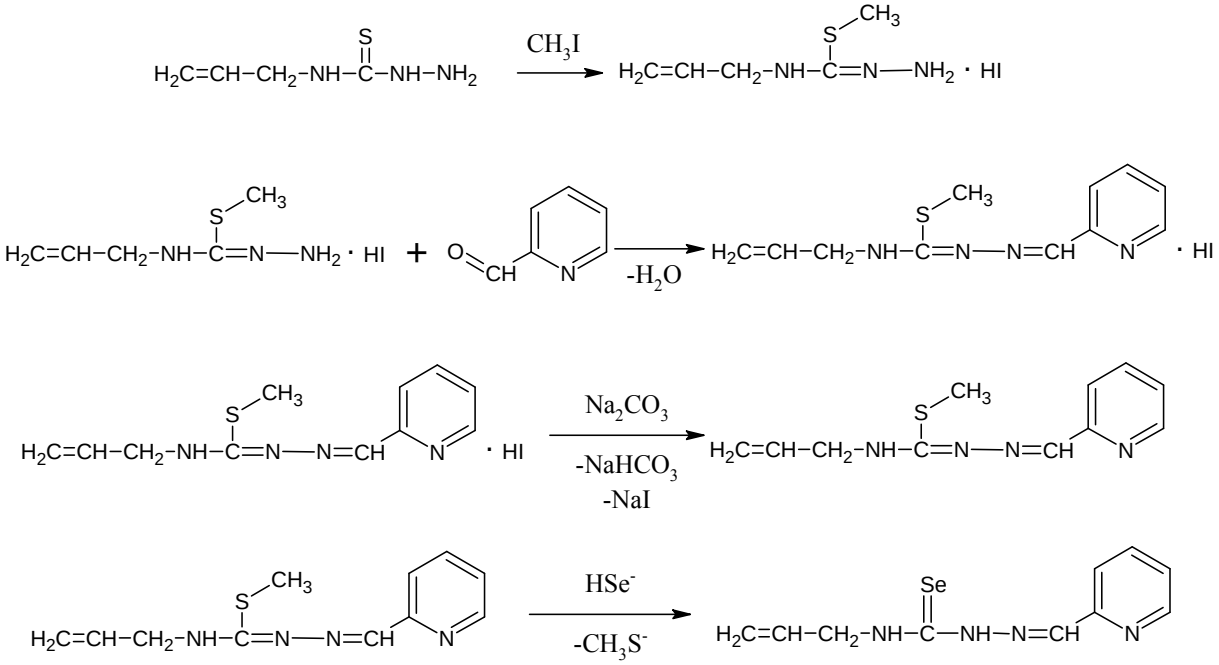
SYNTHESIS OF 2-FORMYLPYRIDINE 4-ALLYLSELENOSEMICARBAZONE

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From the literature source it is known that in many cases enhancement of biological activity is observed when going from semicarbazones/thiosemicarbazones to the corresponding selenosemicarbazones. Many selenosemicarbazones possess antimicrobial, antimalarial, and antitumor activity. Therefore, the aim of this work is finding the synthesis conditions, determination of the composition and structure of 2-formylpyridine 4-allylselenosemicarbazone.

The synthesis of the target compound was done starting form 4-allylthiosemicarbazide according to the scheme:



The first stage was the alkylation of 4-allylthiosemicarbazide with iodomethane. After that, 2-formylpyridine was added to the reaction medium. The resulting hydroiodide of 2-formylpyridine 4-allyl-S-methylthiosemicarbazone was neutralized with sodium carbonate.The solution of sodium hydrogen selenide was prepared by combining selenium powder with sodium borohydride in ethanol under argon. After that the solution of 2-formylpyridine 4-allyl-S-methylthiosemicarbazone in ethanol was added in a single portion to the solution of sodium hydrogen selenide. The resultant solution was stirred and heated for 30 hours. The product was extracted into chloroform. After distillation orange powder of 2-formylpyridine 4-allylselenosemicarbazone was obtained. Its purity was proved by NMR spectroscopy (^{1}H and ^{13}C). The chemical shift of the carbon atom of C=Se group is 176.4ppm. This value corresponds to the values of C=Se chemical shift of similar selenosemicarbazones described in literature [1].

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References

[1] C. Pizzo, G. Salinas, M. Flo, P. Faral-Tello, C. Robello, P. Wipf, G. Mahler, Med. Chem. Commun., 2012, 3, 362-368