SUMMARY

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This work aims to synthesize some new phenoxathiin derivatives and to study their spectral and biological activity.

This work is divided to three parts:

Part 1:

It involves determination of the site of electrophilic substitution on phenoxathiin using ab intio calculations.

Also, involve synthesis of 4-(phenoxathiin-2-yl)phthalazin-1(1H)-one (5) and its mercopto derivative (7) and both reacted with different phthalyl and tosyl amino acid using carbodiimide technique to give 1-N-[pht.(tos.)aminoacyloxy]-4-(phenoxathiin-2-yl) phthalazines (9a-e) and (11a-e) and the corresponding mercapto derivtives (12a-e) and (13a-e).

On the other hand , the deprotected amino acid derivatives (14a-e) and (15a-e) were obtained.

Part 2:

It involves synthesis of 1-hydrazino-4-(phenoxathiin-2-yl)phthalazine (16) and its reactions with various aromatic aldehydes, diethyl oxalate and phenyl isothiocynate to give (17a-d), (18) and (19) respectively.

Also, it involves synthesis of acid (20) which was employed in the synthesis of dipeptide (22a-b).

On the other hand, aminothiadiazole moiety (24) was synthesized and was allowed to react with aromatic aldehydes, acetyl chloride and phenyl isothiocynate to give the corresponding Schiff base,amide and thiourea derivatives respectively.

The structure of all synthesized derivatives was established by

1-Elemental analysis 2- I.R. 3- ^{1}HNMR 4-Mass spectra

Biological activities of some synthesized compounds have been investigated and it was found that some of them have observed biological effect against tested micro-organisms.

Part 3:

It's focused on solvatochromic, effect of solvent polarity will be discussed on the light of hydrogen bonding contribution to the visible intramolecular charge transfer transitions in their absorption and fluorescence emission spectra. Moreover halochromic equilibrium.