

REGIOCONTROLLED CYCLISATION TO THE TETRAAZAPHENOTHIAZINEDIONES: PERFORMANCE OF 4-BENZYLAMINO-4'-CHLORO-5,5'-THIO- OR 5-BENZYLAMINO-4'-CHLORO-4,5'-THIO-BIS(2-METHYL-3(2H)-PYRIDAZINONE) AS THE REGIOCONTROL ELEMENT

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4-Benzylamino-4'-chloro-5,5'-thio-bis(2-methyl-3(2H)-pyridazinone) was heated in a fortified acetic acid, to give exclusively 2,8-dimethyl-10H-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-1,9(2H,8H)-dione(92%), however, the sulphide afforded contrastively, by heating in a sodium hydroxide solution, 2,7-dimethyl-10-benzyl-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-1,6(2H,7H)-dione(79%) without any contamination.

Another regiocontrolled formation of 2,8-diphenyl-(90%) and 2,8-dibenzyl-10H-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-1,9(2H,8H)-dione(93%) was also discriminated from that of 2,7-diphenyl-10-benzyl-(63%) and 2,7,10-tribenzyl-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-1,6(2H,7H)-dione(81%), on similar treatment of the appropriate 4-benzylamino-4'-chloro-5,5'-thio-bis(2-substituted 3(2H)-pyridazinones).

5-Benzylamino-4'-chloro-4,5'-thio-bis(2-methyl-3(2H)-pyridazinone) showed anew a regiocontrollable behaviour for cyclisation to the tetraazaphenothiazinediones, or selective formation of 2,7-dimethyl-10H-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-1,6(2H,7H)-dione(63%) and of 3,7-dimethyl-10-benzyl-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-4,6(3H,7H)-dione(76%), either only depending on the pH of medium employed.

Furthermore, the alternative regiocontrolled cyclisation was observed on the sulphide, 4-allyl-amino-4'-chloro-5,5'-thio-bis(2-methyl-3(2H)-pyridazinone) furnishing the differentiated formation of 2,8-dimethyl-10H-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-1,9(2H,8H)-dione(87%) in an acidic medium, or of 2,7-dimethyl-10-allyl-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-1,6(2H,7H)-dione(69%) in a basic medium, as expected.

A cyclic transition state in which an acid participates essentially in the reaction, so as to array properly the six reacting centres, might be hereby proposed, for those regioselective cyclisations affording 2,8-disubstituted 10H-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-1,9(2H,8H)-diones, as well as 2,7-dimethyl-10H-dipyridazo[4,5-b:4',5'-e][1,4]thiazine-1,6(2H,7H)-dione, in the pertinently adjusted acidic condition.

