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CONVERSION OF SULFIDES TO THEIR CORRESPONDING SULFOXIDES WITH BARIUM PERMANGANATE $Ba(MnO_4)_2$ UNDER NON-AQUEOUS CONDITION

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Summary: Oxidation of sulfides to their sulfoxides is performed well with barium permanganate in refluxing acetonitrile.

Oxidation of sulfides with permanganate ion leads to the formation of sulfones.[1]

Recently we have reported that barium permanganate could be considered as a practical reagent for the oxidation of different classes of organic compounds.[2-4] Now we report that this reagent is able to convert sulfides to their corresponding sulfoxides instead of sulfones.

Products isolated from the reaction mixtures show strong IR absorption band at 1040-1050 cm^{-1} (S=O). The NMR signals

Table

Oxidation of Sulfides to Sulfoxides with $Ba(MnO_4)_2$

No.	R_1	R_2	Reaction Time hr	Yield, %
1	$PhCH_2$	$PhCH_2$-	4	77
2	Ph-	$PhCH_2$-	4	88
3	m-CH_3Ph-	$PhCH_2$-	4	83
4	n-C_4H_9-	$PhCH_2$	5	70
5		$PhCH_2$-	5	60
6		$PhCH_2$-	5	57
7		$PhCH_2$-	4	83
8	m-CH_3Ph-	$-CH_2CH = CH_2$	4	60
9	$PhCH_2$-	$-CH_2CH = CH_2$	4	65
10	Ph-	$-CH_2CH = CH_2$	6	60
11		$-CH_2CH = CH_2$	7	54

also show a nice down-field shifts for the sulfoxides in comparison with their corresponding sulfides.

Reasonable yields (54-88%), mildness of the reaction condition and ease of the work-up make this method a new addition to the methods which are recently developed for the replacement of the commercially discontinued agent; m-chloroperbenzoic acid.[5]

EXPERIMENTAL

Oxidation of Dibenzylsulfide with Barium Permanganate. A Typical Procedure.

In a round-bottomed flask (25 ml) equipped with a condenser and a magnetic stirrer, a solution of dibenzylsulfide (0.436 mg, 2 mmol) in acetonitrile (15 ml) was prepared. To the resulting solution, the oxidant (4.48 gm, 12 mmol) was added and the mixture was refluxed for 4hr. The progress of the reaction was monitored by tlc. The reaction mixture was filtered and the solid material was washed with hot acetonitrile (20 ml). The filtrates were added together and evaporated on a rotory evaporator. The resulting crude material was purified on a preparative silica gel plates eluted with (CH_3OH/ n-hexane: 20/80). Dibenzylsulfoxide was isolated, 0.34 mg, yield, 77% .

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