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N-ALKYLATION OF TRIMETHYLSILYL DERIVATIVES OF ISATIN WITH HALOMETHYL KETONES

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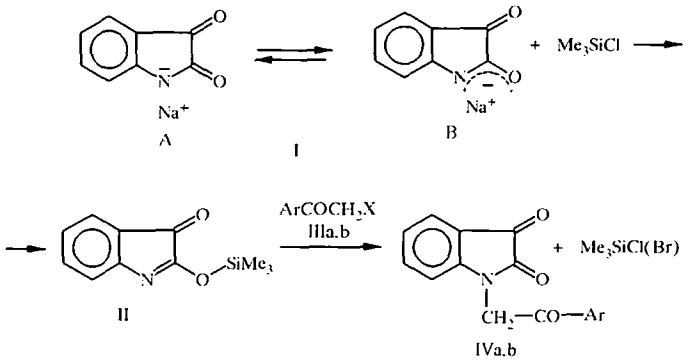
Trimethylsilyl derivative of isatin react with halomethyl ketones at the nitrogen atom in contrast to sodium salt of isatin, which reacts with these compounds at heterocyclic carbon atom.

Sodium salt of isatin reacts as ambident ion IA with trimethylchlorosilane in anhydrous DMF to give trimethylsilyl derivative with probable structure II. The condensation of this derivative with phenacyl halides IIIa and IIIb gives N-phenacyl isatins IVa and IVb, identified by thin-layer chromatography relative to authentic samples obtained through β-ethylenacetal of isatin [1]. The examples presented provide a convenient pathway for the synthesis of ketones IV, which are starting compounds for the indoledione–indole rearrangement [2].



III a X = Cl, b X = Br; III, IV a Ar = 4-ClC_6H_4, b Ar = 4-BrC_6H_4

EXPERIMENTAL

Freshly distilled trimethylchlorosilane and absolute DMF were used. The thin-layer chromatographic analysis of the products was carried out on Silufol plates using 4:1 benzene–acetone as the eluent; development was carried out with iodine vapor.

1-(4-Chlorophenacyl) Isatin (IVa). Sample of sodium hydride (240 mg, 10 mmol) was added in portions to solution of isatin (1.47 g, 10 mmol) dried over P_2O_5 in anhydrous DMF (25 ml). When evolution of hydrogen was ceased (after about 15 min), trimethylchlorosilane (1.62 g, 15 mmol) was added to the mixture and the reaction

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mass maintained at 50°C for 1 h. Then, *p*-chlorophenacyl chloride (1.89 g, 10 mmol) was added. The reaction mixture was slowly heated to 120°C, maintained at this temperature for 3 h, cooled to 20°C, and poured into 250 ml of water. The precipitate was removed, washed with hot water (90°C) in order to remove unreacted isatin (TLC control), dried, and crystallized from glacial acetic acid. Yield of IVa 2.13 g (71%); mp 234-236°C.

1-(4-Bromophenacyl) Isatin (IVb). A. Isatin IVb was obtained in 68% yield using *p*-bromophenacyl bromide and the above procedure.

B. Isatin IVb was obtained in 58% yield using equimolar amounts of the silver salt of isatin [3], trimethylchlorosilane, and phenacyl bromide IIIb; mp 244-245°C [1].

REFERENCES

1. G. I. Zhungietu, V. I. Gorgos, N. A. Rekhter, and A. I. Korpan', *Izv. Akad. Nauk MoldavSSR, Ser. Biol. Khim. Nauk*, No. 3, 61 (1980).
2. M. A. Rekhter, *Khim. Geterotsikl. Soedin.*, No. 9, 1170 (1998).
3. G. I. Zhungietu and M. A. Rekhter, *Isatin and Its Derivatives* [in Russian], Shtinitsa, Kishinev (1977), p. 33.