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CARBODIIMIDES FROM PSEUDOSACCHARINCHLORIDE +

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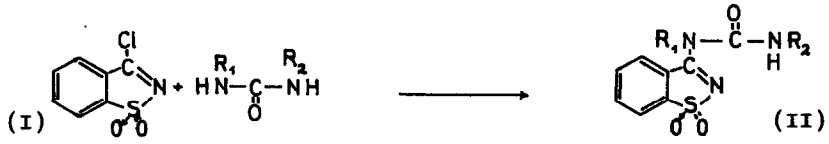
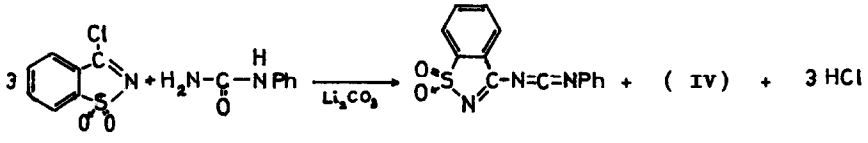
3-Chlorobenzisothiazole-S-dioxide (I = "pseudosaccharinchloride") [1] reacts with substituted ureas to yield compounds of type II [2]



From thermal fragmentation of the substituted ureas (II) we obtained the corresponding isocyanates. When phenylurea and substituted phenylureas (R_1 = H, R_2 = Ph) were used in the reaction small amounts of carbodiimides (III) were isolated besides (II).

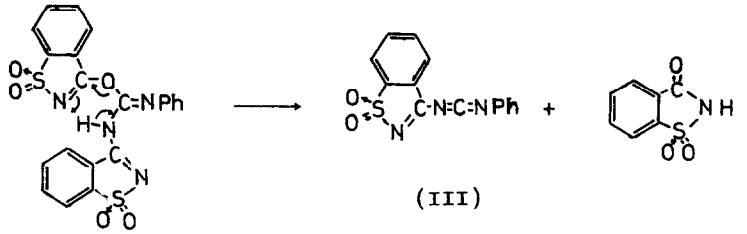


(I) (III)

When the reaction was carried out in acetonitrile solution in the presence of lithium carbonate formation of carbodiimide (III) became the main reaction (>85 %). For each molecule of carbodiimide (III) apparently one molecule of "pseudosaccharinanhydride" (IV) [3] is formed with no other byproducts. The two reaction products can be easily separated since (IV) is almost insoluble in most solvents. Evidence for the carbodiimide structure of the compounds was taken from infrared spectroscopy, elemental analysis and mass spectrometry. Purity was checked by analytical and preparative thin layer chromatography.

+ Reactions with pseudosaccharinchloride Part IV

The reaction apparently does not proceed via a 6 membered cyclic mechanism [2]



(III)

since compound (II) fails to react with (I) under the conditions mentioned above.

Saccharine with base catalysis reacts with pseudosaccharinchloride to form pseudosaccharinanhydride (IV) [3].

Experiments with III as condensing agents are under way. On the whole carbodiimides of type III seem to be less reactive than dicyclohexylcarbodiimide.

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Literature

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3. H. BÖHME and H. OPFER, Z. f. anal. Chem. 139, 255 (1953).