

SYNTHESES AND REACTIONS
OF TETRAAZANAPHTHALENE DERIVATIVES

Akio Miyake, Katsumi Itoh, Norio Tada, Yoshikazu Oka, and Shojiro Yurugi

Chemical Research Laboratories, Central Research Division,

Takeda Chemical Industries, Ltd.

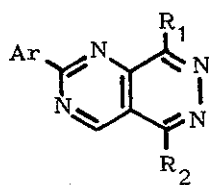
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In connection with the study of the previously reported diuretic, 5,8-dimorpholino-2-phenylpyrimido[4,5-d]pyridazine (Ia), a variety of phenyltetraazanaphthalene derivatives (I-V) was synthesized.

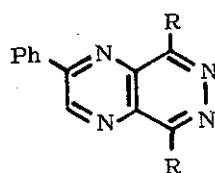
Reaction of I with a Grignard reagent or an organolithium afforded 4-substituted-3,4-dihydro derivatives (VI). The use of an excess of the reagent gave rise to further substitution at the 8-position. Dehydration of VI with 2,3-dichloro-5,6-dicyanobenzoquinone (DDQ) gave the normal dehydrated product, whereas oxidation with potassium ferricyanide, nitrobenzene or bromine effected elimination of the 4-substituent when the substituent was benzyl, allyl, t-butyl or cyclohexyl. Photochemical additions of alcohols and cyclic ethers to I also occurred exclusively at the 4-position, which were markedly facilitated by the addition of a photosensitizer such as acetone and acetophenone.

Similar results were obtained in the reactions of other tetraazanaphthalene analogues, II and IV.

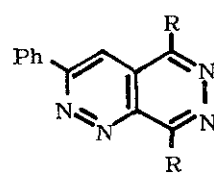
Among the derivatives obtained by the above reactions, several compounds were found to exhibit potential diuretic activity.



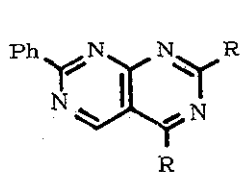
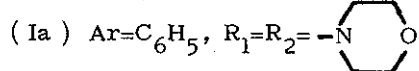
(I)



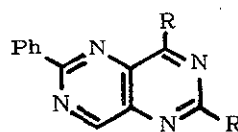
(II)



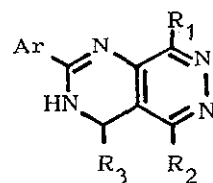
(III)



(IV)



(V)



(VI)

R=cyclic amino