CONденсATION OF 3-METHYL-O-PHENYLENE DIAMINE WITH BENZALDEHYDE: FORMATION OF 4-METHYL BENZIMIDAZOLES

While extensive work was carried out on the condensation of simple and 4-substituted o-phenylenediamines with aldehydes, studies on a similar condensation with 3-substituted diamines has not so far been reported. In acetic acid medium, the diamine-aldehyde condensation is known to yield 2-mono and 1,2-disubstituted benzimidazoles.

In the present investigation, 3-methyl-o-phenylene diamine has been condensed with two moles of benzaldehyde in acetic acid resulting in two crystalline compounds (TLC pure), one melting at 250° and the other at 105°. The former has been characterised as 2-phenyl-4 (7)-methyl benzimidazole (I), which was earlier prepared by another method. The latter on the basis of chemical analysis and ir and nmr spectral data has been considered to be 1,2-disubstituted benzimidazole- either 1-benzyl-2-phenyl-4-methyl benzimidazole (II) or 1-benzyl-2-phenyl-7-methyl benzimidazole (III). To ascertain the structure of the compound, (II) and (III) have been independently synthesised through unambiguous steps, starting from 3-chloro-2-nitro toluene and 2-chloro-3-nitro toluene respectively. The 1,2-disubstituted benzimidazole obtained in the aldehyde condensation could be identified as 1-benzyl-2-phenyl-4-methyl benzimidazole (II).

The formation of (II) but not (III) in this diamine aldehyde condensation through an expected dibenzylidene derivative will be favoured by electronic factors. Full details of the work will be published elsewhere.

EFFECT OF RICE TUNGRO VIRUS (RTV) INFECTION ON STARCH, REDUCING SUGAR AND PHOSPHORUS CONTENTS OF LEAVES OF DIFFERENT VARIETIES OF RICE

Most of the high yielding varieties of rice are susceptible to rice tungro virus (RTV). Tai-chung (Native) 1 and Padma are highly susceptible whereas Jaya and IR-8 are moderately susceptible. A few workers 1, 2, 4 have observed alterations in the chlorophyll, starch and ribonucleic acid contents in T(N) 1. Chowdury 3 first observed differential decrease of chlorophyll content and increase of RNA content in leaves of Padma, Jaya and IR-8 according to their relative susceptibility to RTV. In this report, attempt has been made to observe changes in starch, reducing sugar and phosphorus in RTV inoculated leaves of Padma, Jaya and IR-8.

The selected rice varieties were grown at the University farm in Kharif 1971, in replicative plots following usual cultivation practices. Nitrogen was applied at the rate of 40 kg N/ha in split dosages and no plant protection schedule was adopted. Field inoculation was done by releasing viruliferous Nephotettix virescens on T(N) 1 seedlings grown in two rows around each experimental plot. Uniform number of leafhoppers were released in each row so that the test plants may be exposed to the identical pressure of the inoculum. The plots were kept under continuous observation and leaf samples were collected from the diseased plants after 35 days of the appearance of symptoms. The samples were oven-dried at 80°C for 48 hours and then powdered with a grinder using 80 mm mesh. The starch, reducing sugar and phosphorus contents of different samples were estimated following the methods of Yoshida et al. 8. To estimate reducing sugar and starch, the samples were treated with 80% ethanol. The supernatant obtained was used for sugar analysis while the residue left, was utilized for starch analysis. The residual material was treated with perchloric acid. The glucose content of the supernatant thus obtained and sugar solution previously collected were determined by anthrone reaction and subsequent spectrophotometric measurement of the absorbancy at 630 μm.

The glucose standards for sugar extract and starch extract were separately prepared following different procedures. Phosphorus content was determined by treating the acid extracted (mixture of nitric, sulphuric and perchloric acids) materials with nitric acid and molybdate vanadate solution and subsequent spectrophotometric measurement at 420 μm, using monobasic potassium phosphate solution as standard.

Reducing sugar content decreased in the leaves of all the three varieties and was highest in Padma.