

grouping, no further decomposition taking place. A similar experience with hexamethylene-tetra-amine when reacting with HCl is obtainable. The formation of only a disodium salt with Na_2CO_3 in the presence of three reactive hydrogen atoms is explained by the existence of only two of these being free in $-\text{SO}_2-\text{N}-\text{C}$ groups, the third one having been isomerised to $-\text{SO}_2-\text{N}-\text{C}$ combination and having been stabilised by chelation.

Further work on the suggested chemical structure is in progress.

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1. Bhatnagar, S. S., and Fernandes, F., *Nature*, 1949, 164, 272. 2. Druey, J., *Helv. Chem. Acta.*, 1948, 31, 179. 3. Druey, J., and Becker, A, *ibid.*, 1948, 31, 2184. 4. Basu, U. P., *Jour. Ind. Chem. Soc.*, 1949, 26, 125. Duden, P., and Scharff, M., *Ann.*, 1895, 288, 218. 6. Walker, J. F., "Formaldehyde," Reinhold Publishing Co., New York, 1944.

FRIEDEL-CRAFTS ACYLATION OF METHYL β -RESORCYLATE: A NEW AND CONVENIENT SYNTHESIS OF 2-ACETYLRESORCINOL

By Friedel-Crafts acetylation of methyl β -resorcyate with acetic anhydride Desai, *et al.*¹ obtained methyl 2, 4-dihydroxy-5-acetylbenzoate (I) but no γ -isomer, methyl 2, 4-dihydroxy-3-acetylbenzoate (II). It is now found however, that besides (I) and a small quantity of methyl 2, 4-dihydroxy-3, 5-diacetylbenzoate, (II) is formed in considerable quantities (Ca 25% yield). The structure of (II) is established by hydrolysis and decarboxylation to 2-acetylresorcinol: it is quantitatively converted directly to the latter by heating with 10% sodium hydroxide solution on steam-bath for three hours. Similarly 2-propionylresorcinol could be obtained and the reaction thus appears capable of providing convenient syntheses of 2-acylresorcinols which are generally obtained indirectly by the method of Limaye,² by the hydrolysis of 7-hydroxy-4-methyl-8-acyl-coumarins.

This formation of (II) is however expected for methyl β -resorcyate

gives 3-formyl derivative in the Gammann reaction according to Shah Laiwalla³ and the 5-hydroxy-coumarin derivative as the main product in Pechmann reaction as shown by Se Shah and Shah.⁴ Extension of this reaction for the syntheses of 2-acylresorcinols in progress and results will shortly be published elsewhere.

Our grateful thanks are due to Dr. Shah for his kind interest in this work.
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1. Desai and Ekhlal, *Proc. Ind. Acad.* 1938, 8A, 194; Desai and Radha, *Ibid.*, 12A, 46; 2. *Ber.*, 1934, 67, 12; 3. *J.C.S.*, 1828. 4. *Ibid.*, 1938, 228.

OCCURRENCE OF FUNGI INSIDE RICE KERNELS

THE study on the nature of action of fungicides "Spergon" and "Phygon" in preventing loss of viability of paddy seeds in storage Ramiah and Padmanabhan (1949) has revealed that even apparently healthy seeds contain an internally borne fungus, which may be cultured artificially. The fungus that occurred most was *Choconis padwickii* Ganguly (Padwick Ganguly,² 1945; Ganguly,³ 1946). The method employed in culturing the seeds and the results obtained are given below.

Four ounces of seeds of five local types T. 90, T. 412, T. 812, T. 1145, and T. 1146 were kept in equilibrium with six different relative humidities in desiccators with phosphoric acid dilutions in the beginning of May, 1949. During the first week of June and the third week of July samples were drawn from the desiccators and tested for the presence of surface-borne and internally borne fungi. No distinction was made between the apparently healthy seeds and the small percentage of visibly spotted seeds.

The seeds were made to stand for 1 hour in 10 c.c. of sterile water in test-tubes washed in a single change of sterile water. They were then surface sterilised in 0.1% mercuric chloride solution (one minute), washed again in four changes of sterile water and sown in thin oat-agar plates. A week after sowing, observation was taken on germination and any fungus, if any, growing from the seed, was identified.

The seeds germinate in 24 to 48 hours. After the emergence of the radicle and the plumule, when the latter is about a centimetre in length, a white tuft of mycelium grows out of the seed, at the base of the plumule, or in rare cases from the opposite end also. The mycelium grows slowly and establishes itself in the medium, forming characteristic sclerotia. The fungus is easily recognised by its compact light-olive gray colour, velvety surface as well as by its sclerotia (Fig. 1). Characteristic *Trichoconis* stage of the fungus is readily obtained by cutting out a portion of the medium

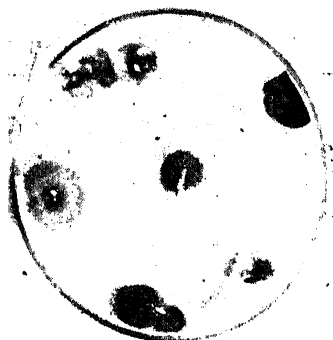


Figure showing seven seeds of T. 812 with pure growths of *Trichoconis padwickii* $\times \frac{1}{4}$ Nat. size.

along with the fungus and placing the same in a moist chamber. A variant with light-pink thallus is also met with occasionally. This imparts the same pinkish colour to the medium.

Table gives the percentage of seeds with fungi growing out of them.

Type of paddy	Percentage of seeds infected by fungi			
	All fungi	<i>T. padwickii</i>	Other than <i>T. padwickii</i>	Unidentified fungi
T. 90 ..	87.0	64.6	1.80	20.6
T. 1145 ..	91.0	68.5	7.99	14.5
T. 812 ..	93.0	76.0	8.7	8.3
T. 412 ..	81.5	56.5	11.6	13.4
T. 1242 ..	85.4	51.3	23.45*	10.75

* A number of seeds in this variety had spots; this explains the high percentage in Col. 3.

It will be seen that more than 80-90 per cent, of the seeds had harboured an in-

ternal fungus though they were apparently healthy. *T. padwickii* occurs most in these seeds (51-76%). The percentage of unidentified growth varied from 8 to 20%. The other fungi identified were *Curvularia lunata* Boedj. *Ophiobolus miyabeanus* Ito and Kuribay. = (*Helminthosporium oryzae* Breda de Haan) and *Nigrospora oryzae* (B. & Br.) Petch.

T. caudata has been reported to be associated with deterioration of paddy seeds in storage and from the condition created by the presence of the fungus in paddy stack, the disease was called "Stack-Burn," (Tisdale,⁴ 1922). Ganguly³ showed that *T. padwickii* is a weak pathogen on rice causing leaf and grain spot without doing great damage to the crop.

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1. Ramiah, K., and Padmanabhan, S. Y., 30th Proc. Indian Science Congress, 49.
2. Padwick, G. W., and Ganguly, D., *Curr. Sci.*, 1945, 4, 328-29.
3. Ganguly, D., *Journ. Indian Bot. Soc.*, 1947, 26(4), 233-39.
4. Tisdale, W. H., *U. S. D. A. Bull.*, 1922, No. 1116.

THE EFFECT OF WATER-LOGGING ON THE CHEMISTRY OF SUGARCANE JUICE

EXCEPT for a few crops like paddy and jute, water-logging is detrimental to crop production. Knee deep water-logging in cane fields has been found to affect sugar recovery adversely and to create difficulties in manufacture.

In view of the importance of non-sugars^{2,4,5,6} in determining manufacturing qualities of juices, an examination of the changes brought about by water-logging in respect of these constituents was considered worth while.

Two varieties of cane (Co. 453 and B.O. 3) grown under water-logged conditions (submerged from July to September up to a maximum height of 4 ft.) were under examination. Samples were drawn in December and non-sugar constituents in their juices (Table I) compared with those in