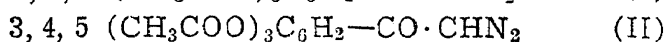
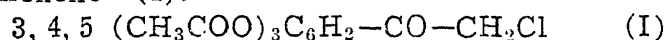


ACTION OF DIAZOMETHANE ON TRIACETYLGALLOYL CHLORIDE

IN the course of our attempts to synthesize 5-hydroxyadrenaline it was found necessary to prepare *w*-chloro-3,4,5-triacetoxy acetophenone (I).



Nierenstein and co-workers^{1,2} have shown that *w*-halogenated acetophenones are formed by the action of diazomethane on aromatic acid chlorides. But our attempts to prepare (I) by the application of Nierenstein's reaction always yielded only the corresponding diazoketone (II) in good yield. A search in the literature revealed that Robinson and his collaborators had prepared (II) by the action of diazomethane on triacetylgalloylchloride and that the Robinson school^{4,5} had differed

procedure, with good stirring. The diazoketone separated out at the end of the reaction and was purified by crystallisation from alcohol. Experiments were conducted with varying proportions of diazomethane and triacetyl galloylchloride at 0°C. and at 23-26°C. But the product obtained was invariably the diazoketone (M.P. 125-126°C.) which on treatment with alcoholic hydrogenchloride or hydrogenbromide, gave the desired chloro-or the bromoketone respectively.

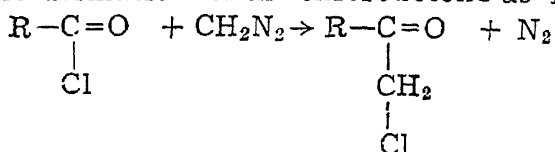
It was also found that triacetylgalloyl chloride could be prepared in a more facile manner by the action of thionyl chloride than by the action of phosphorus pentachloride⁷ on triacetylgallic acid. The present work supports Robinson's explanation for the mechanism of the Nierenstein reaction.

The results of some typical experiments are tabulated in the table.

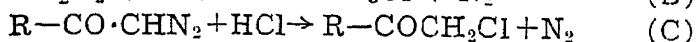
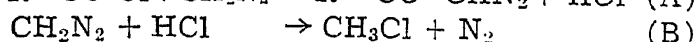
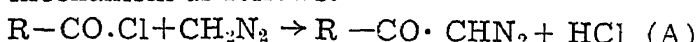
TABLE

No.	Triacetyl galloyl chloride g.	Diazomethane in Ether	Temperature of reaction ° C.	Experimental details	Yield of <i>w</i> -diazoc-3, 4, 5-triacetoxy acetophenone (II)
		g.			
1	3 (1 mol.) in ether	0.48 (1.2 mol.)	23-6	Kept overnight after the addition	1.4 g. (46%)
2	50 (1 mol.) in benzene	10 (1.5 mol.)	23-6	Kept overnight	13.5 g. (27%)
3	5 (1 mol.) in chloroform	1.5 (2.3 mol.)	0	50 c.c. of the ethereal solution of diazomethane added at 0°C. and 30 c.c. of it added at the ordinary temp. all at once	5 g. (Theoretical)
4	15 (1 mol.) in chloroform	2 (1 mol.)	23-6	Diazomethane solution added with mechanical stirring	8 g. (53%)

in their views from those expressed by Nierenstein with regard to the mechanism of reaction between aromatic acid chlorides and diazomethane. Comparing his reaction with Schlotterbeck reaction⁶, Nierenstein^{1,2}, explained the formation of the chloroketone as follows:



On the other hand, Robinson and his collaborators (*loc. cit.*) who obtained diazoketone as the major product, explained the reaction mechanism as follows:



But, unlike Nierenstein, Robinson and co-workers had added the acylchloride (1 mol.) to the diazomethane solution (2 mols.) whereby the tendency for the non-formation of the chloroketone might be dominant. A systematic study of the action of diazomethane on triacetyl galloyl-chloride has now been undertaken following Nierenstein's procedure.

In general, the experimental procedure was, to add the diazomethane solution dropwise to the acid chloride and not the acid chloride to the diazomethane solution as in Robinson's

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WATER-MELON AND FOOD-POISONING

2. The Viability of the Test Bacteria in the Juice

BACTERIA of the food-poisoning group have been reported to proliferate¹ in the water-melon juice at a more rapid rate than the other tested intestinal bacteria; this may account for the outbreaks of food-poisoning through this source. Experiments on the viability of these bacteria in the juice, as the following results will reveal, substantiate fully the above observation.

For the experimental purposes the juice was collected in 10 ml quantities in sterile test tubes and was tested for sterility before use. Likewise, the initial pH of the juice was also

determined electrometrically. Duplicate sets of the tubes were then seeded with 0.1 ml saline-suspensions of the test bacteria, viz., *E. typhosa*, *S. paratyphi*, *S. schottmuelleri*, *S. enteritidis* and *E. coli communis*, all the strains being the type cultures referred to previously.¹ Control tubes (uninoculated) were also maintained in every experiment. All the tubes were then incubated at the room temperature (30-31° C.) after 2-mm loopful from each tube was removed for inoculation on the MacConkey's agar slope. After 24-hrs. a loopful from each tube was again utilized for viability test on the same medium and another loopful was used for the inoculation of meat-infusion broth tube for securing more sensitive results. Further 1 ml aliquots removed aseptically from every tube was plated out with 9 ml of MacConkey's agar for confirmatory results. All the media so inoculated were incubated at 37° C. and the results read after 24 and 48 hours. In a similar way the viability tests were carried out after 48, 72, 96 and 120 hours of incubation of the juice samples at the room temperature.

From the duplicate sets of the seeded juice samples, one set was boiled for 10 minutes after 24-hrs. of incubation and the pH of the juice in every tube was determined. These readings indicated the changes produced in the initial pH of the juice as a result of the 24-hr. metabolic activities of the different bacteria. The other set (employed for the viability tests) together with the control tubes were subjected to heating and pH determination only after 120 hours, i.e., after the test bacteria

had completely disappeared from the juice. Altogether five different samples of the juice were examined in this manner. Since the initial pH and the results obtained in two of the cases overlap each other, the details of only four experiments are tabulated below.

The results indicate clearly that the death of the organism, in every instance, is attributable to a fall in pH, which is in agreement with that of Mackenzie⁴, and it is interesting to note here that this fall in pH is more gradually registered in the case of *S. schottmuelleri*, *S. enteritidis* and *E. coli* as compared to the other two species; but still we find that the critical pH, which actually is responsible for the disappearance of the cells, is sooner reached in the *Eberthella* and two of the *Salmonella* species rather than in *S. schottmuelleri* and *E. coli*. *S. schottmuelleri* thus appears to be the more tolerant of the species in the genus and this is in agreement with the observation made before² in connection with sugarcane juice. Moreover the higher incidence of this species in the intestinal disturbances³ in this part of the country, together with the observation that this organism can not only multiply at a very rapid rate in the water-melon juice but also retain all its cultural and antigenic characteristics, strongly suggest its possible association with the outbreaks of food-poisonings.

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August 9, 1948.

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A MOSAIC DISEASE OF *CARICA PAPAYA* L. IN THE BOMBAY PROVINCE

A mosaic disease of *Carica papaya* first collected in March 1947 at Bombay was later observed in June 1947 in a nursery at Poona, where majority of the papaya plants growing at the time were seriously diseased. Typical mosaic symptoms in the diseased plants suggested the possibility of a virus being involved. This was confirmed on transmission of the disease by sap inoculation to healthy papaya seedlings raised from seed in the insect-proof glasshouse. The serious nature of the disease and the rapidity with which it was spreading to the neighbouring papaya plantations warranted its immediate investigation. This note deals briefly with the symptoms, the virus, its transmission in nature and the possible line of control.

Under insect-proof conditions in the glass-houses at Poona, papaya plants invariably showed the first symptoms of disease in the form of solid dot-like necrotic spots all over the lamina of the new developing leaf in about 20 days following inoculation. Use of 600-mesh fine carborundum powder as an abrasive gave a higher percentage of infection and the disease symptoms also appeared a little earlier

Expt.	Species	pH			Viability in hrs.
		Initial	24 hrs.	Critical	
1	T	5.56	4.49	4.00	48
	A	"	4.44	3.86	48
	B	"	4.78	3.98	120
	E	"	4.66	3.93	48
	C	"	4.36	3.86	72
	Control	"	5.56	(5.55)*	..
2	T	5.59	4.55	4.00	48
	A	"	4.52	3.92	48
	B	"	4.68	3.85	120
	E	"	4.68	3.92	48
	C	"	4.95	4.01	72
	Control	"	5.59	(5.58)*	..
3	T	5.88	4.59	4.10	48
	A	"	4.48	3.86	48
	B	"	4.73	3.81	96
	E	"	4.66	3.85	48
	C	"	4.92	3.85	72
	Control	"	5.88	(5.87)*	..
4	T	6.10	4.61	4.12	48
	A	"	4.51	3.98	48
	B	"	4.71	3.87	120
	E	"	4.69	3.97	48
	C	"	4.99	3.99	72
	Control	"	6.10	(6.10)*	..

Legend: T = *E. typhosa*; A = *S. paratyphi*; B = *S. schottmuelleri*; E = *S. enteritidis*; C = *E. coli*,
()* = Final pH.