It has been observed that there is a considerable reduction in phosphate sorption capacities of these soils on removal of iron, ranging from 16 to 72%. Fractionation studies indicate that there is a reduction in aluminium bound phosphorus to the extent of 50% and no effect on other forms on removal of iron. Though the method of removal of iron is not specific and some amount of aluminium is also removed,[5] still the reduction in sorption capacity and aluminium bound phosphorus cannot account for the small amount of aluminium removed.

The conclusion drawn from the results with these soils is that the phosphate sorption in these soils is also considerably dominated by aluminium and not by iron. Presence of iron has an activating effect in sorption of phosphate by aluminium.

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SYNTHESIS OF 3-(2'-METHYL-4'-ETHOXY-5'-ISOPROPYLPHENYL)-5, 5-DISUBSTITUTED VALEROLACTONES

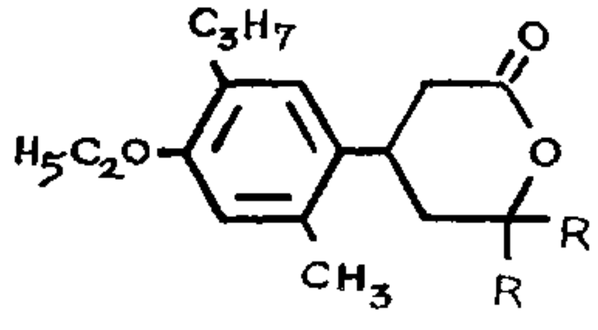
IN continuation of our work on substituted valerolactones as possible anthelmintics,[1] synthesis of 3-(2'-methyl-4'-ethoxy-5'-isopropylphenyl)-5, 5-disubstituted valerolactones was undertaken.

Various alkyl and aryl Grignard reagents were condensed with 3-(2'-methyl-4'-ethoxy-5'-isopropylphenyl)-glutaric anhydride[2] following the procedure of Weizmann[3] when valerolactones of the type I were obtained. Formation of I was confirmed through their elemental analysis and IR spectral studies. The physical characteristics of these valerolactones are described in Table I.

To a solution of one mole of anhydride in dry benzene, an ethereal solution of two moles of Grignard reagent was added with stirring and after the completion of addition, solvent ether was removed and the mixture was refluxed for 20 hr. The reaction mixture was then hydrolysed with ice and hydrochloric acid, extracted with ether, washed well with water and dried over anhydrous sodium sulphate. The extract upon concentration and subsequent crystallization or distillation gave desired valerolactones.

TABLE I

General formula for lactones



I

Comp. No.	R	m.p./b.p. °C.	Yield %	Molecular formula	Composition %			
					Carbon		Hydrogen	
					Calcd.	Found	Calcd.	Found
1	Methyl ..	119–120	39	$C_{19}H_{28}O_3$	74·96	75·16	9·27	9·90
2	Ethyl ..	105–106	40	$C_{21}H_{32}O_3$	75·88	75·28	9·71	9·98
3	*n*-Butyl ..	238–240/0·8 mm.	23	$C_{25}H_{40}O_3$	77·27	77·97	10·38	10·04
4	Allyl ..	220–222/0·5 mm.	17	$C_{23}H_{32}O_3$	77·50	77·28	9·05	9·12
5	Phenyl ..	238–240/0·7 mm.	34	$C_{29}H_{32}O_3$	81·27	81·06	7·53	7·52
6	Benzyl ..	106–107	24	$C_{31}H_{36}O_3$	81·53	81·28	7·95	7·33
7	Anisyl ..	176–178/0·4 mm.	Traces	$C_{13}H_{36}O_5$	76·21	75·83	7·43	7·56

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A NOTE ON THE APPLICATION OF THE CONGLUTINATING COMPLEMENT ABSORPTION TEST FOR THE DETECTION OF RINDERPEST ANTIBODIES

ALTHOUGH various workers have reported the use of conglutinating complement absorption test as a sero-diagnostic tool in a number of viral diseases[1] there is no report on the use of this technique in sero-diagnosis of rinderpest. This communication describes briefly the application of this test and certain observations on the immunogenic response to rinderpest virus.

Three hundred serum samples from different species of animals were screened with this test. The serum samples were collected at different time intervals from buffalo calves and calves after vaccination with rinderpest goat-adapted virus vaccine. The cattle and buffalo sera were inactivated at 56° C. for 30 minutes.

Hyperimmune sera were raised in rabbits with 3-4 weekly intravenous injections of 10% lapinised rinderpest virus Nakamura III. The animals were bled 7–20 days after the last injection of the virus. Rabbit sera were inactivated at 62° C. for 30 minutes. Hyperimmune sera were also prepared in hill bulls and calves by immunizing them with the goat-adapted virus followed by repeated large doses of virulent rinderpest virus.

The antigen was prepared from a pool of lymph nodes collected from goats at the height of reaction after they were infected with goat-adapted rinderpest virus. The lymph nodes were ground and freeze-dried. The dried material was kept at room temperature for two months. The antigen was extracted from this dried material at an alkaline pH by Nakamura's technique.[3] The pH of the antigen was adjusted to 7·5. The antigen was used at 1 : 4 dilution. Control antigen was derived from normal goat lymph nodes and was prepared in a similar manner.

Conglutinating complement absorption test employing standard procedure was carried out using different amounts of horse complement (ranging between 1·4-2 units) and an indicator system consisting of equal volumes of 1 : 20 heat-inactivated bovine serum and 0·25% sheep red cells. Primary incubation of antigen, antibody and complement was carried out at 18-20° C. for 30 minutes. Two unit volumes of the indicator system (previously incubated at 37° C. for 15 minutes) were added. The complete test was incubated at 37° C. for 30 minutes and thereafter all the tubes were centrifuged. The test was read by resuspension technique—a cloudy suspension of sheep R.B.Cs. indicated presence of antibodies whereas aggregated R.B.Cs. indicated absence of antibodies. The appropriate controls of antigen, serum, complement, etc., were included in each test.

Sera from forty animals have shown varying degrees of antibody response to rinderpest infection. It is found that detectable antibody titres were obtained after field vaccination and higher antibody titres were recorded after challenge with local virulent hill bull rinderpest virus. The antibodies were demonstrated as early as 5-7 days after inoculation until at least 40 days of vaccination or infection. The results of the conglutinating complement absorbing antibody levels in serial bleedings of two buffalo calves are presented in Fig. 1.

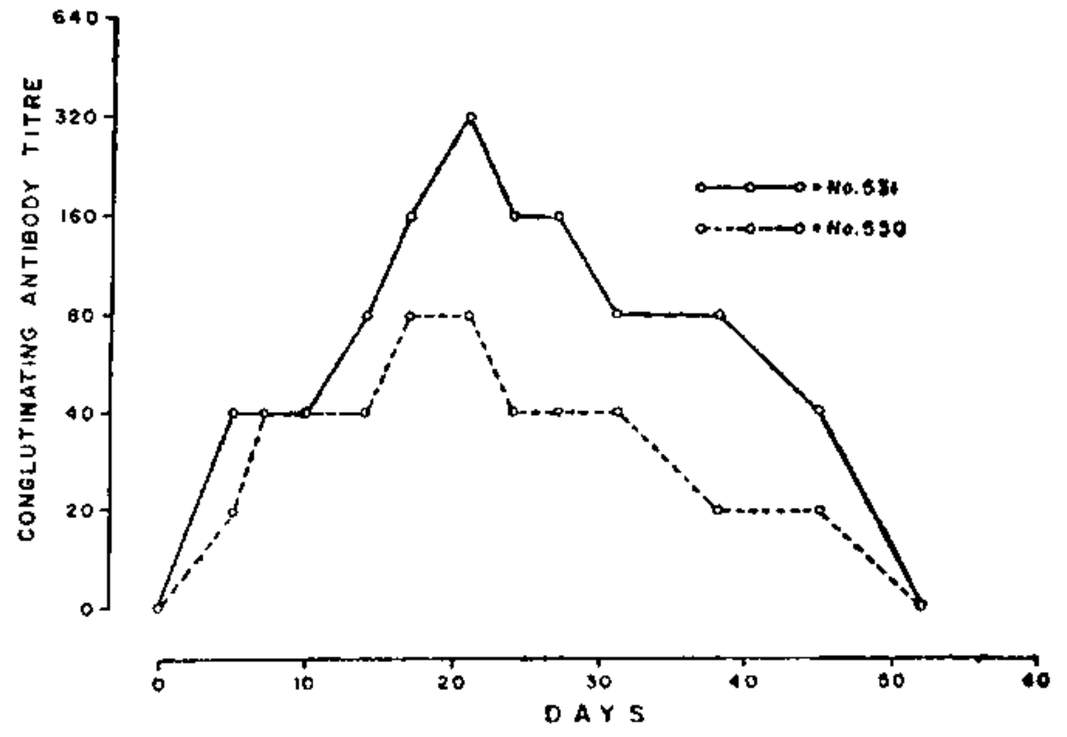

FIG. 1. Antibody response in buffalo calves (Nos. 530 and 531) following inoculation with goat-adapted rinderpest virus vaccine.

Reciprocal antibody titres as obtained after hyperimmunisation in rabbit and cattle sera were very high (Table I).

It appeared from the results that conglutinating complement absorption test could be employed for the demonstration of rinderpest antibodies in cattle and rabbit sera. The