cent after 2 hours, and 56 per cent after 3 hours) indicates a definitely slow rate of absorption as compared to sulfadiazine absorption, in which case an average of only 12 per cent was recovered after ½ hour and 5 per cent after 1 hour of absorption. It therefore becomes increasingly evident that the major portion of an oral dose of penicillin passes through the upper portion of the intestinal tract unabsorbed. When it reaches the lower portions of the tract, where bacteria are more numerous and inactivating enzymes more likely to be present, destruction occurs before complete absorption can take place. Work to be published later confirms the assumption of a progressive rate of penicillin destruction downward in the gastrointestinal tract.

The slow absorption of penicillin from the intestine can be added to evidence of its passage with difficulty through certain other body membranes (*4*).

Efforts to increase the efficiency of oral administration should be directed toward increasing its penetration through the intestinal mucosa.

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Toxicity of DDT Isomers to Some Insects Affecting Man[1]

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Isolation of o,o′-DDT [1-trichloro-2,2-bis(o-chlorophenyl)ethane] from technical DDT by a method involving preferential dehydrochlorination with ethanolic sodium hydroxide of the more reactive p,p′-DDT [1-trichloro-2,2-bis(p-chlorophenyl)ethane] and o,p′-DDT [1-trichloro-2-o-chlorophenyl-2-p-chlorophenylethane] and oxidation of the resulting olefins with chromic anhydride, leaving the unreactive o,o′-DDT isomer, has recently been reported (*2*). Isolation of the other two isomers, p,p′-DDT, the major and most active constituent of technical DDT, and o,p′-DDT, the major impurity, has previously been reported (*4*).

As there has been considerable interest and speculation on the possible insecticidal activity of the o,o′-DDT isomer, we wish to present data as to the action of the substance against the fourth-instar larvae and adults of the common malaria mosquito (*Anopheles quadrimaculatus* Say) in America and against the housefly (*Musca domestica* L.) and the body louse (*Pediculus humanus corporis* Deg.). For comparison, results on the p,p′ and o,p′ isomers are also included. The compounds used had the following melting points: o,o′-DDT, 92–93° (cor.) (*2*); p,p′-DDT, 108.5–109.0° (cor.) (*4*); o,p′-DDT, 74.0–74.5° (cor.) (*4*).

The tests against the mosquito larvae were carried out by the beaker method in acetone-water suspension (*3*). Tests were made in triplicate, 20 insects being used in each test. Results are given in Table 1.

TABLE 1

TOXICITY OF DDT ISOMERS TO FOURTH-INSTAR LARVAE OF *A. quadrimaculatus*

DDT isomer	Dosage (ppm)	48-hr. mortality (%)
o,o′	5.0	17
	7.5	100
p,p′	0.00125	7
	.0025	32
	.005	74
	.01	100
o,p′	0.005	6
	.01	16
	.03	85

Spray tests were made against adult houseflies and mosquitoes. One ml. of a 1-per cent solution of each of the isomers in refined kerosene (Deobase) was sprayed into a 100-cubic-foot chamber in which the insects were exposed in small screen-wire cages and tested by a pendulum-swinging method. The tests were conducted in triplicate. Approximately 300 insects were used in each test. Results are given in Table 2.

TABLE 2

TOXICITY OF DDT ISOMERS TO ADULT HOUSEFLIES AND *A. quadrimaculatus*

DDT isomer	Houseflies			Mosquitoes		
	Knockdown in 10 min. (%)	Knockdown in 30 min. (%)	Kill in 24 hr. (%)	Knockdown in 10 min. (%)	Knockdown in 30 min. (%)	Kill in 24 hr. (%)
o,o′	0	0	1	5	6	15
p,p′	0	14	50	20	69	89
o,p′	0	0	0	6	8	20

In tests against body lice by the beaker test method (*1*), o,o′-DDT and o,p′-DDT gave no kill at 0.2 per cent, whereas p,p′-DDT gave 100 per cent mortality at this concentration.

As compared with p,p′-DDT, the o,o′-DDT isomer was found to be of a very low order of toxicity against the adult and fourth-instar larvae of the common

[1] This research was conducted under a program supported by transfers of funds from the Office of the Quartermaster General and the Office of the Surgeon General of the U. S. Army to the Bureau of Entomology and Plant Quarantine.

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malaria mosquito and the adult housefly and body louse. Although o,p′-DDT was ineffective against adult mosquitoes, houseflies, and body lice, it was found to be a fairly effective anopheline larvicide.

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Blood Sugar Level Following Intravenous Glucose in Rheumatoid Arthritis

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It has been observed (*3*) and many times confirmed that patients with rheumatoid arthritis show a slower return of the blood sugar level to the fasting figure following the oral administration of glucose than do normal subjects. This has been variously considered as the result of (a) faulty intestinal absorption; (b) disturbances of pancreatic function (*2*); (c) circulatory abnormalities (*4*); and (d) dysfunction (*1, 6*).

To evaluate the role of gastrointestinal dysfunction and/or intestinal circulatory alterations, Soskin's intravenous glucose tolerance test (*5*)[2] was done on 64 patients with rheumatoid arthritis and 60 subjects with no evidence of organic disease. All patients with rheumatoid arthritis had multiple peripheral joint involvement and sedimentation rates (Wintrobe method) above 25 mm./hour.

In rheumatoid arthritis the blood sugar levels of 8 of the patients (12.5 per cent) had returned to the preinjection or fasting level within 60 minutes; in 42 patients (65.6 per cent) the blood sugar values fell to the preinjection level in between 60 and 120 minutes; and in 14 patients (21.9 per cent) the blood sugar levels at the end of 120 minutes were still higher than the preinjection figures. In the normal cases the blood sugar levels of 43 subjects (71.7 per cent) had returned to the preinjection level within 60 minutes; in 16 subjects (26.7 per cent) the blood sugar levels returned to the preinjection levels in between 60 and 120 minutes; and in 1 subject (1.6 per cent) the blood sugar was still elevated at the end of 120 minutes.

In Soskin's report (*5*) the blood sugar level of all of the normal controls (30 in number) returned to the preinjection figure within 60 minutes after the intravenous administration of the glucose. The fact that somewhat more than 25 per cent of the authors' normal controls failed to return within 60 minutes is not explainable on the basis of the numerical difference between the two groups. Soskin also found that in 25 cases of hepatic disease the blood sugar invariably

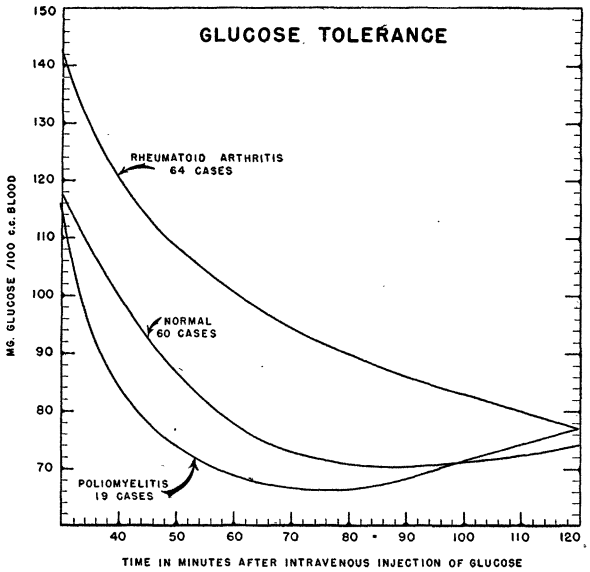

Fig. 1. Curves showing fall of the blood sugar level in the rheumatoid, normal control, and poliomyelitis groups. The curves of the three groups begin at the 30-minute postinjection level rather than the fasting level, since in all determinations the latter was arbitrarily adjusted to a level of 74 mg./100 cc.

returned to the preinjection level in between 60 and 120 minutes following the intravenous administration of the glucose. All but one of the authors' controls that failed to return in 60 minutes did so in 120 minutes. According to Soskin's data this would indicate that these subjects had hepatic disease. It is unlikely that such an assumption is correct, since approximately 50 per cent of the authors' normal controls showing an "hepatic curve" were officers and enlisted men on full military duty. The lack of agreement between the figures obtained by Soskin and those found by the authors in no way detracts from the present study, however, since the intravenous glucose tolerance was used primarily to evaluate the role of intestinal dysfunction. The striking difference between the results obtained by the intravenous glucose tolerance test in rheumatoid arthritis and those obtained in the normal controls is demonstrated in Fig. 1, which shows the

[1] Presently located at Columbia University, New York City, and Veterans Administration, Washington, D. C., respectively.

[2] Method: One-third gram of dextrose/kg. body weight in a 50-per cent aqueous solution injected intravenously within a period of 3–5 minutes. A preinjection fasting and 30-, 60-, and 120-minute postinjection venous blood samples were assayed by the Somogyi method for the determination of the true blood sugar level.