in any toxin, also that both activities are destroyed at the same temperature.

If we are correct in the interpretation of our results, leuco-agglutinin and leucocidin actually represent two stages of the action of the same toxic substance, and the leuco-agglutinin test, because of its simplicity and its clear-cut quantitative results, may be used to advantage over previous methods for the quantitative determination of leucocidin in staphylococcal toxins.

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Effect of Propazone on Respiration of Rat Tissue *in vitro*.*

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Propazone (5, 5-di-n-propyl-2, 4-oxazolidinedione) is one of a new series of compounds recently prepared and studied by Stoughton,[1] which has been shown to have hypnotic and anesthetic properties.[2] The structural relationship to the barbiturates and hydantoinates indicates that this agent might inhibit tissue respiration as do these other fixed hypnotics.[3] Propazone sodium† offers certain advantages in this type of study in that it is more soluble in water than the barbiturates and is nearly neutral in reaction. The effect of propazone on the respiration of rat liver, kidney cortex and cerebral cortex slices is described in the present paper. Twenty-four adult male rats were used.

The rate of oxygen consumption was measured by the Warburg manometric method, and is expressed in μl, N.P.T., per mg wet weight per hour (Q_{O_2}). The methods of preparation of tissue slices have been described previously.[4] The suspension medium was Ringer's phosphate, pH 7.35, containing 0.2% glucose. Propazone sodium was dissolved in glucose-free Ringer's phosphate and added

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1 Stoughton, R. W., *J. Am. Chem. Soc.*, 1941, **63**, 2376.

2 Stoughton, R. W., and Baxter, J. H., *J. Pharm. and Exp. Ther.*, 1941, **73**, 45.

3 Quastel, J. H., *Physiol. Revs.*, 1939, **19**, 135.

† We wish to thank Dr. R. W. Stoughton of the Mallinckrodt Chemical Works for his kindness in supplying propazone sodium.

4 Fuhrman, F. A., and Field, J., 2d, *J. Pharm. and Exp. Ther.*, in press.

from the side-arms of the experimental vessels after 40 minutes. The Q_{O_2} during this period in which no propazone was present was used as the control in the calculation of inhibition. This is called Q_{O_2} C. The Q_{O_2} in the presence of propazone, Q_{O_2} P, was calculated for the period 45 to 75 minutes after addition of the drug, at which time the rate of oxygen consumption was constant. The intensity of inhibition is expressed by the ratio

$$\frac{Q_{O_2}\ P}{Q_{O_2}\ C}$$

which is termed the inhibition ratio.

The respiration of kidney cortex, liver and cerebral cortex slices was inhibited by propazone sodium in concentrations ranging from 50 to 500 mg % (2.4×10^{-3} to 2.4×10^{-2} M). This is shown in Table I. Q_{O_2} C and inhibition ratios are mean values obtained from 4 animals each.

If succinate or p-phenylenediamine were substituted for glucose as substrate, the inhibition produced by propazone was much less. With these substrates (0.02 M and 0.01 M respectively) the inhibition ratios for cerebral cortex with 250 mg % propazone were 0.94 and 0.96 respectively. Thus, as with other fixed hypnotics,[3] concentrations which produce considerable inhibition of respiration in a glucose medium have little or no effect in media containing succinate or p-phenylenediamine.

It is shown in Table II that the inhibition of respiration produced by propazone is reversible, at least in the case of kidney cortex. To obtain these data, Q_{O_2} C was determined for kidney slices, the drug then added, and Q_{O_2} P determined as before. After 40 minutes of inhibition, the slices were removed from the respirometer vessels, washed twice in Ringer's, placed in fresh suspension medium and Q_{O_2} measured again. Control slices receiving no propazone were treated similarly. Under these conditions, inhibition by 500 mg % propazone proved to be about 70% reversible.

TABLE I.
Effect of Propazone Sodium on Oxygen Consumption of Rat Tissues *in vitro*.
Medium: Ringer's-phosphate-glucose, pH 7.4, Temp. 37.5°C.

Tissue	Mean Q_{O_2} of controls	Inhibition ratios* Concentration Propazone Sodium, mg%			
		50	100	250	500
Liver	1.54	.78	.64	.47	.29
Kidney Cortex	4.48	.80	.71	.60	.26
Cerebral Cortex	2.26	.90	.78	.27	.15

*Inhibition ratio: Q_{O_2} Propazone/Q_{O_2} Control.

TABLE II.
Reversibility of Propazone Inhibition of Oxygen Consumption in Rat Kidney Cortex Slices.
Medium: Ringer's-phosphate-glucose, pH 7.4, Temp. 37.5°C.

	Propazone sodium, 500 mg%	Control
Mean Q_{O_2} before addition of propazone	5.30	4.60
Mean Q_{O_2} 35 min. after addition of propazone	1.80	4.60
Mean Q_{O_2} 45 min. after washing slices	3.20	3.95

Conclusions. Propazone sodium inhibits the oxygen consumption of rat kidney cortex, liver and cerebral cortex slices *in vitro*. For a given concentration of propazone, this inhibition is much more marked in media containing glucose than in those containing succinate or p-phenylenediamine. In kidney cortex the inhibition is about 70% reversible.

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Drug Prophylaxis Against Lethal Effects of Severe Anoxia. II. Alcohol, Amytal and Pentobarbital.

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Effects of certain respiratory stimulants and other convulsants as antagonists to the lethal effects of acute anoxia have been reported.[1] Comparison of prophylactic effects of other types of agents through a standardized technic[2] is desirable, since many of the compounds previously reviewed[1] exhibit their protective action only under special conditions. Inasmuch as none of the convulsants affords complete prophylaxis against lethal effects of acute anoxia, it is of interest to observe the influence of various representative narcotics.

It was postulated[1] that, among others, an agent inhibiting the tendency toward convulsions in acute anoxia and an agent easily utilized as a nutrient under anoxic conditions might be of value if such agents did not unduly depress the nervous mechanisms governing respiration. Proper doses of ethyl alcohol may combine these 2 characteristics without too great respiratory depression. Accord-

[1] Emerson, G. A., and Van Liere, E. J., *Arch. internat. Pharmacodyn.*, 1940, **64**, 239.

[2] Emerson, G. A., Van Liere, E. J., and Morrison, J. L., to be published.