

Upon readmission of air the values obtained successively were 60 mm., 50 mm., and 40 mm. Hg. respectively, indicating a complete reversibility of the effect of low oxygen.

2. A series of experiments was carried out in which the carotid sinus pressor reflexes were tested by raising the pressure in the carotid sinus. The procedure of Lim and Chang³ was used. It was found that the fall of blood pressure resulting from an increase of pressure in the carotid sinus was diminished during the period of inhalation of 9% O₂. Upon readmission of air the original effects were reestablished.

The experiments prove that the carotid sinus pressor reflexes are diminished under conditions of oxygen deficiency. This fact explains the different reactions of blood pressure in man to the inhalation of low oxygen gas mixtures in the erect and recumbent position.

Conclusions. During inhalation of 7-9% oxygen the pressor reflexes of the carotid sinus are greatly reduced. This is shown, (1) by a greater fall of blood pressure in the carotid artery upon changing from the horizontal to the vertical (feet down) position than is obtained under control conditions before and after the administration of low oxygen; (2) by a diminished response of the blood pressure under low oxygen to a given increase in pressure in the carotid sinus.

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Inactivation of Complement by Iodo-acetic Acid.*

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In preceding studies¹ it has been shown that normal guinea-pig complement can be reversibly inactivated by a number of oxidizing agents provided that the inactivation be controlled. The oxidants employed were iodine, H₂O₂, quinone, and O₂ and the reductants H₂S, KCN, ascorbic acid, and sodium hydrosulfite. It was also

³ Lim, R. K. S., and Chang, H. C., *Chinese J. Physiol.*, 1936, **10**, 29.

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¹ Ecker, E. E., Pillemer, L., Martiensen, E., and Wertheimer, D., *J. Biol. Chem.*, 1938, **123**, 351.

found that normal complement inactivated by controlled oxidation with the agents mentioned can be regenerated by heat-inactivated complements and by complement deprived of the 3d or 4th components.

Since it is known that iodoacetate combines readily with sulphhydryl to form a mercaptide it was thought of interest to treat fresh guinea-pig complement with iodoacetate and to attempt a reactivation with various reductants and fractions of complement.

Fresh guinea-pig complement was diluted 1:10 with 0.85% saline and treated with varying amounts of a 0.5 M iodoacetate solution in bicarbonate-CO₂-buffer of pH 7.2. The mixtures were allowed to incubate for 15 minutes at 25°C. and thereafter immediately treated with various reductants.

The reagents and amounts employed are found in Tables I and II, and the method of complement-titration was the same as described by Ecker, Pillemer, Wertheimer and Gradis.² The results are given in percentages.

TABLE I.
The Reversible Inactivation of Complement by Iodoacetate.

	%
A Complement dilution 1:30 (control)	100
B 1 cc. of 1:10 complement + 0.45 cc. CH ₂ ICOOONa + 1.55 cc. saline	25
B + 1 mg. ascorbic acid	50
B + 3 " " "	66
B + 5 " " "	25
B + 10 " " "	0
B + 1 " glutathione (SH)	66
B + 3 " " "	66
B + 5 " " "	0

From these results it is evident that optimal amounts of ascorbic acid and glutathione (SH) markedly reactivated the iodoacetate-treated serum. No reactivation was observed when H₂S water (sat.) and N/100 KCN were employed.

TABLE II.
The Results Obtained with Various Components of Complement.

	%
A Complement dilution 1:30 (control)	100
B 1 cc. of 1:10 complement + 0.5 cc. CH ₂ ICOOONa	33
1 cc. of B ; 1 cc. 1:10 inactivated complement (55°C. 30 minutes)	33
1 cc. of B + 1 cc. 1:10 NH ₃ -treated complement	33
1 cc. of B + 1 cc. 1:10 yeast-treated complement	100

² Ecker, E. E., Pillemer, L., Wertheimer, D., and Gradis, H., *J. Immunol.*, 1938, **34**, 19.

All these experiments have been duplicated.

Chow and Wong³ have just reported the inactivation of complement by iodine, thus substantiating our previous findings.

Summary. Iodoacetate, a compound known to form mercaptides with sulphhydryls, has been shown to inactivate guinea-pig complement. The inactivated complement was partially regenerated with ascorbic acid and glutathione (SH) but not with saturated H₂S water or KCN by our experimental procedure. This would indicate that the action of the iodoacetate on guinea-pig complement is not wholly upon thiol grouping, and that it may have other effects on the protein molecule. The fact that the iodoacetate-treated complement could be reactivated with two natural occurring reductants points to the possibility of a specific action of these two agents.

From these observations it must be assumed that iodoacetate acts primarily upon the protein and possibly on the 4th component of complement.

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Serum Lipoids and Complementary Activity.*

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Ottolenghi and Mori,¹ and Guggenheimer² showed that complement treated with ether became inactive after the solvents were allowed to evaporate. Toda and Misuse³ reported later that the factor removed by extraction with chloroform or ether was the same as the 4th component. They further claimed that a similarity exists between the 4th component and the lipid fraction since cadmium compounds, known to combine with lecithin, inactivate this component. Benzene inactivated their complement and the inactive serum was regenerated by the fraction soluble in benzene but not by the 4th component. Since this heat-stable fraction did not reacti-

³ Chow, Bacon F., and Wong, Sam C., *PROC. SOC. EXP. BIOL. AND MED.*, 1938, **38**, 120.

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¹ Ottolenghi, D., and Mori, M., *Centralbl. f. Bakt. I*, 1905, **38**, 338, 468.

² Guggenheimer, H., *Z. f. Immunitätsf.*, 1910, **8**, 295; 1911, **11**, 393.

³ Toda, T., and Misuse, B., *ibid.*, 1933, **78**, 62.