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Carrot Diet and Susceptibility to Acute "Anoxia."*

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Campbell^{1,2} fed carrots to a group of rats and observed that the diet protected the animals from the effects of acute anoxia. By determining what ingested substances hasten or retard the death of animals exposed to a lethal degree of oxygen deficiency, Campbell believed that he could not only gain insight into the mechanisms involved, but could also devise a diet beneficial for patients suffering from various forms of anoxia.

There is increasing doubt as to the validity

of obtaining data under one condition of anoxia and exposure to altitude and conjecturing therefrom as to what would obtain in more or less severe degrees of oxygen want or exposure to other altitudes. Nevertheless the clear cut results of acute studies are valuable in suggesting possibilities to be verified in chronic and less severe states.

The current interest in anoxia prompted us to repeat Campbell's apparently significant observations, especially since he used only relatively small groups of animals.

Experimental. Two hundred and fourteen male rats (194 albino and 20 hooded) were divided into odd and even groups. The mean body weight of the former was 171.3 g and the latter, 173.1. They will be designated as Groups A and B, respectively.

* This study has been aided by a grant from the Clara A. Abbott Fund of Northwestern University.

¹ Campbell, J. A., *Quart. J. Exp. Physiol.*, 1938, **28**, 231.

² Campbell, J. A., *Quart. J. Exp. Physiol.*, 1939, **29**, 259.

The animals of Group A were housed in wire-bottomed cages and fed nothing but fresh carrots and tap water *ad libitum* for 10 days. The animals of Group B had a standard diet of Wayne's Kennel Krums, ground corn, and tap water *ad libitum* to which was added whole milk on the first and fifth experimental days and bread and lettuce on the third and eighth days.

On the eleventh day the animals were reweighed. The mean weight of Group A was 150.6 and that of Group B was 185.8.

The animals were placed in a decompression chamber which was illuminated to permit observation of their behavior. A detailed description of the tank is published elsewhere.³

The pressure was reduced to 225.6 mm Hg. (simulated altitude of 30,000 ft.) in 15 min and maintained at that level for 2 hr; after which it was returned to ground level in 45 min.

The temperature in the tank was as follows: 0-0.5 hr, 78°F; 0.5-1 hr, 80°F; 1-1.5 hr, 84°F; 1.5-2.0 hr, 86°F.

³ Andrews, A. H., Jr., Roth, L. W., and Ivy, A. C., *Quart. Bull. Northwestern University Medical School*, 1941, **15**, 46.

Results. Of the 107 carrot-fed rats 85 (79%) survived the exposure to high altitude whereas only 23 of the 107 control animals (21%) survived.

This striking difference in the survival of the treated and untreated groups confirms the result reported by Campbell. Our technic was not exactly that used by Campbell but the differences were obviously unimportant.

Experiments are now in progress which are designed to clarify the factors responsible for the protective effect of the carrot diet.

Summary. One hundred seven rats fed nothing but carrots for 10 days and 107 rats fed a stock diet were subjected to a simulated altitude of 30,000 ft for 2 hr. Eighty percent of the carrot-fed animals survived and only 20% of the controls survived. The animals on the carrot diet lost 1% of their body weight per day.

A diet of nothing but fresh carrots fed to rats for 10 days for some unknown reason affords marked protection against the lethal effects of exposure to a simulated altitude (decompression chamber) of 30,000 ft for 2 hr. This confirms the observations of J. A. Campbell.¹

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Cardiovascular Effect of Trichlorethylene.

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The neural depressing effect of trichlorethylene¹ can explain the alleviation of pain observed clinically, yet its value in the prevention and treatment of angina pectoris² may be also due to a cardiovascular effect. With this possibility in mind, a study of the effect of trichlorethylene on the cardiovascular system was undertaken.

Two reports dealing with the cardiovas-

cular effect of trichlorethylene are available. Both are from the same group of workers.^{3,4}

Lever experiments with the frog's heart were first carried out. Both the atrial and ventricular beat were recorded. The results from 6 experiments were alike. When 1 cc

³ Krantz, J. C., Carr, C. J., and Harne, W. J., *Proc. Soc. Exp. Biol. and Med.*, 1934, **32**, 334.

⁴ Krantz, J. C., Carr, C. J., Musser, R., and Harne, W. G., *J. Pharm. and Exp. Therap.*, 1935, **54**, 327.

¹ Rubenstein, H. S., Painter, E., and Harne, O. G., *J. Lab. and Clin. Med.*, 1939, **24**, 1238.

² Love, W. A., *Ann. Int. Med.*, 1937, **10**, 1187.