

en accord parfait avec les calculs établis par CARR¹ sur des bases toutes différentes.

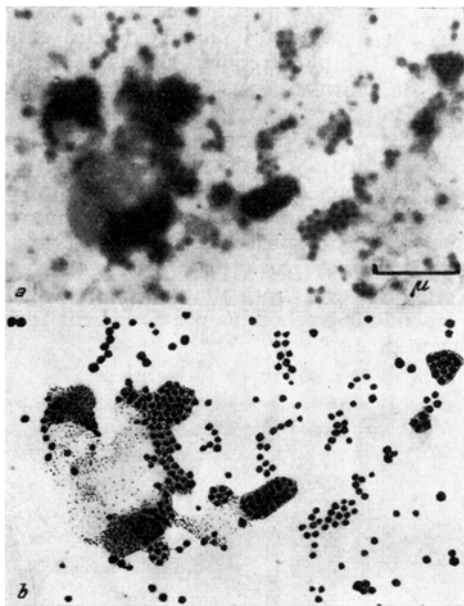


Fig. 5a. Portion cytoplasmique d'une cellule sarcomateuse traitée à l'alcool C¹⁴. Présence de nombreuses colonies de corpuscules dont quelques-unes prennent l'aspect de véritables corps d'inclusion qui paraissent se constituer à partir de masses très denses et homogènes. Grossissement 11 000 ×.

Fig. 5b. Dessin du même endroit destiné à mieux montrer la structure fine des corps denses, visibles seulement par transparence sur le cliché original.

2° Que les corpuscules-virus en voie de formation peuvent prendre l'apparence de corps d'inclusion ou d'ébauches de figures cristalloïdes, comparables à celles mises en évidence par WYCKOFF² dans certains bactériophages et autres virus.

Nous tenons à exprimer notre reconnaissance à Mme LISE DUGIED et à Mlle HENRIETTE GOARÉGUER pour leur collaboration technique qui nous a été très précieuse.

CH. OBERLING, W. BERNHARD,
Mme A. DONTCHEFF et P. VIGIER

Institut de Recherches sur le Cancer, Villejuif (Seine), France, le 11 août 1953.

Zusammenfassung

In vitro gezüchtete Zellen des Rous'schen Sarkoms wurden der Wirkung von Röntgenstrahlen und radioaktivem Alkohol (CH₃C¹⁴H₂OH) ausgesetzt und darauf elektronenoptisch untersucht. In einem geringen Prozentsatz der untersuchten Kulturen (9,5 %) konnten virusartige Partikelchen von 60 bis 90 mμ Durchmesser intra- oder extrazellulär dargestellt werden, die mit den von CLAUDE, PORTER und PICKELS gefundenen identisch sind und wahrscheinlich dem Rousschen Virus zugeordnet werden können. Es wurden Kolonien von solchen Gebilden intrazytoplasmatisch in Form von Einschlusskörperchen beobachtet. Auch unbestrahlte Kontrollen

von Sarkomzellen wiesen Viruskörperchen auf, wenn auch bisher in geringerem Prozentsatz.

Es ist vorderhand noch unsicher, ob der Bestrahlung eine primäre Rolle in der Darstellbarkeit dieser Viren zukommt.

Metabolic Effects of Neopyrithiamine and the Aneurin Contents in the Tissues of the Rat

In earlier researches¹ on the metabolic alterations produced in the rat treated with Neopyrithiamine (N.P.), we observed an increase in the blood pyruvate, decrease of the R.Q. and a decrease in the energetic metabolism (H.P.) of the same entity as demonstrated by rats on an aneurin-deprived diet (3–4 weeks); a more marked diminution of muscular glycogen, and a more rapid onset of muscular fatigue in the isolated muscle (diaphragm) in contrast to the rats on a vitamin deprived diet. After administration of glucose (1 g) *per os*, we noted no increase of the H.P. and R.Q., contrary to what is observed in the control rats and in the rats on an aneurin-deprived diet (3–4 weeks²). From these results we concluded that the avitaminosis B₁ produced in a short time by the action of antivitamin B₁ (N.P.) was more marked than that which is obtained after 3–4 weeks of an aneurin-deprived diet. Particularly interesting to us was the lack of a change in the H.P. and R.Q. after the administration of glucose and, since the observation was based on only two experiments due to the small quantity of N.P. at our disposal, we thought it proper to repeat it, as soon as we received a further quantity of N.P., kindly put at our disposal by Merck House (New York³).

On other 3 groups (2 animals in each group; white rats, 75–85 g) treated with endoperitoneal injection of N.P. (5 mg *pro die* for 5–6 days consecutively), we confirmed what we had previously observed that after introduction of glucose the R.Q. and especially the H.P. remain practically unchanged, which shows the lack of utilization of the glucides, under the action of the antivitamin. The R.Q. and H.P. were determined on groups of two animals each kept under a glass bell of known capacity for 10'. The samples of air were analyzed with the Haldane-Margaria apparatus. The glucose (1 g in 1 ml of water) was administered by sound. The determinations were made after 40–60 min. The results are shown in Table I. The fact that the non-utilization of the glucides is due entirely or in part to an altered mechanism of intestinal absorption was not taken into consideration in the present researches.

To explain the different behaviour obtained with N.P., we thought it expedient to determine the contents of the total aneurin in the tissues (thiochrome method⁴ with adsorption on Decalso and elution with acid KCl), considering it to be a reasonable supposition that the gravity of the avitaminosis must be preceded to an equal extent by loss of vitamin in the tissues.

We have taken into consideration (as shown by SEALOCK and WHITE⁵ an interference of the thiochrome

¹ L. DE CARO and G. RINDI, *Boll. Soc. ital. Biol. sperim.* 28, 1869 (1952).

² L. DE CARO, C. CASELLA, and G. RINDI, *Exper.* 8, 431 (1952).

³ We particularly thank Dr. K. FOLKERS for his kind and frequent offers of samples of Neopyrithiamine.

⁴ Association of Vitamine Chemists, Inc., *Methods of Vitamin Assay*, 2nd Ed. (Interscience Publishers, New York, 1951), p. 111.

⁵ R. R. SEALOCK and H. S. WHITE, *J. Biol. Chem.* 181, 393 (1949)

¹ J. G. CARR, *Proc. Roy. Soc. (Edinburgh [B])* 62, 247 (1947).

² R. W. G. WYCKOFF, *Presse médicale* 58, n° 82, 25 décembre 1950. Article dans «Science in Progress» [7], Ed. Baitsell, Yale University Press 1952.

Table I

Rats	H.P. (Cal/m ² /h)		R.Q.	
	Before	After glucose administration	Before	After glucose administration
Neopyrithiamine*	58.7	48.5	0.73	0.72
Neopyrithiamine*	44.2	42.4	0.64	0.65
Neopyrithiamine	50.2	49.9	0.67	0.84
Neopyrithiamine	48.6	46.4	0.84	0.76
Neopyrithiamine	54.6	49.8	0.75	0.91
	51.2 ± 2.5	47.5 ± 1.3	0.72 ± 0.03	0.77 ± 0.045
Avitaminosis**	58.1 ± 2.2	67.2 ± 1.9	0.78 ± 0.007	0.92 ± 0.006
Controls**	69.8 ± 1.9	75.1 ± 1.2	0.81 ± 0.01	0.93 ± 0.005

* L. DE CARO and G. RINDI, Boll. Soc. ital. Biol. sperim. 28, 1869 (1952). ** L. DE CARO, C. CASELLA, and G. RINDI, Exper. 8, 431 (1952).

method with N.P., and in an effort to diminish this interference, we have reduced the oxidation time to the minimum (35 s) by collateral tests of determination of aneurin in the presence of various quantities of N.P. The results are shown in Table II together with the blood pyruvate values (Lu method, modified by FORNAROLI¹). Comparing the level of aneurin of the tissues in animals treated with N.P. with those of deprived animals on an avitaminic diet of several days duration, it is observed that: in muscle N.P. lowers the aneurin contents to a level corresponding to a 5–10 day avitaminosis; in the liver the contents is lowered to a level equal to a 10-day avitaminosis; in the brain N.P. lowers the contents of aneurin to a conspicuous degree, bringing the level to approximately one half of that which is observed after 3 weeks of avitaminosis. N.P. shows, therefore, a particular specificity in lowering the aneurin contents of nervous tissue (brain), which, as is known, and as our results confirm, is the most resistant in respect to aneurin loss during avitaminosis on a diet completely lacking in vitamin B₁. The lack of utilization of the glucides in avitaminosis B₁ seems to be in relation to a low level of aneurin present in nervous tissue, a level that is very seldom obtained with a deficient diet, but which is obtained rapidly with the administration of N.P.

¹ P. FORNAROLI, Boll. Soc. ital. Biol. sperim. 15, 511 (1940).

In conclusion:

Rats treated with Neopyrithiamine (N.P.), in comparison to avitaminotic rats resulting from a diet lacking in aneurin, and the controls, do not show an increase in R.Q. and H.P. after glucose administration. N.P. shows a particular specificity in lowering the aneurin contents of nervous tissue (brain), lowering it approximately to one half of the level obtained after 23 days of avitaminosis (diet). The lack of utilization of glucides, as is shown by the absence of a metabolic response after glucose administration, seems to be in relation to a low level of aneurin in the nervous tissue.

L. DE CARO, G. RINDI, and E. GRANA

Institute of Human Physiology, University of Pavia, September 23, 1953.

Riassunto

Ratti trattati con neopiritiamina presentano un contenuto particolarmente basso di aneurina nel tessuto nervoso (cervello) e non rispondono alla somministrazione di glucoso (per os) con aumento di Q.R. e di produzione calorica come, invece, fanno i controlli e i ratti carenzati mediante la dieta (3–4 settimane).

Table II

Rats	Blood pyruvic acid mg/100 g	Aneurin content (total) in the tissue µg/g		
		Liver	Muscle	Brain
Vitamin B ₁ deprived diet				
days 0	1.35 ± 0.07	7.42 ± 0.15	1.60 ± 0.05	3.38 ± 0.07
days 5	1.77 ± 0.06	2.82 ± 0.23	0.80 ± 0.07	2.89 ± 0.14
days 10	1.42 ± 0.11	1.31 ± 0.21	0.52 ± 0.06	2.07 ± 0.12
days 15	2.16 ± 0.37	0.91 ± 0.10	0.34 ± 0.03	1.37 ± 0.10
days 18	2.37 ± 0.26	0.57 ± 0.05	0.40 ± 0.06	1.37 ± 0.16
days 23	2.94 ± 0.42	0.71 ± 0.09	0.31 ± 0.02	1.18 ± 0.10
Neopyrithiamine				
6 mg × 5 days	3.54	2.08	0.75	0.67
6 mg × 5 days	1.28	1.44	0.65	0.55
6 mg × 6 days	2.27	1.19	0.54	0.57
6 mg × 6 days	2.12	1.20	0.81	0.53
6 mg × 6 days	1.93	1.05	0.75	0.57
6 mg × 6 days	1.96	1.02	0.79	0.58
	2.18 ± 0.30	1.33 ± 0.16	0.71 ± 0.04	0.57 ± 0.02