

At 50 per cent saturation with ammonium sulphate, an inactive fraction of 'clarase' is precipitated. In this way, a more concentrated preparation may be obtained. Further attempts are being made towards complete isolation of the enzyme.

L. M. DZIALOSZYNSKI

Biochemical Laboratory,
Organic Chemistry Department,
University of Poznan,
March 26.

¹ Dzialoszynski, L. M., *Nature*, **160**, 464 (1947).

² King, E. J., and Armstrong, A. R., *Canad. Med. Assoc. J.*, **376** (Oct. 1934).

Reciprocal Detoxifying Effects of 'Benadryl' and 'Aminopterin'

AN attempt has been made to overcome the toxic effect of the 4-aminopteroylglutamic acid, the new powerful folic acid antagonist¹. Aminopterin is toxic to all laboratory animals used and also to human beings²⁻⁷. Its toxic effects are difficult to prevent or to reverse by administration of folic acid⁸⁻¹⁰, whereas the effects of the X-methyl analogues of folic acid are easily reversed by administration of folic acid⁶. In the experiments reported here, 'Benadryl' was used in an attempt to antagonize the toxic effects of 'Aminopterin'.

Twenty albino mice (mean weight, 25 gm.) were divided in two series, as follows:

	First series	Second series
No. of mice treated	10	10
Single injection of 'Aminopterin'		
Intraperitoneally	1 mgm.	1 mgm.
'Benadryl' subcutaneously	None	0.5 mgm. twice daily
Mortality	10/10	10/10
Death following the injection of 'Aminopterin'		
0-1 day		2-4 days
2-2 days		4-5 "
4-3 "		4-6 "
4-4 "		" "

These results, although limited, suggest that 'Benadryl' is able to a moderate extent to delay death in mice treated with a single injection of 1 mgm. of 'Aminopterin' intraperitoneally. To determine whether a true relationship might be present between the two substances, experiments were performed to determine the effects of 'Aminopterin' on guinea pigs treated with a lethal dose of 'Benadryl'. The lethal dose of 'Benadryl' varies with the animals used^{11,12}. In guinea pigs, the intraperitoneal injection of 40 mgm. per kgm. was often followed by a convulsive state which ended with the death of the animals¹³.

Of twenty guinea pigs (mean weight, 625 gm.), ten, used as controls, were given 25 mgm. of 'Benadryl' intraperitoneally. Within ten minutes all the animals went into a convulsive state that lasted about three hours, after which four of them died. The other ten guinea pigs were given 1 mgm. of 'Aminopterin' intraperitoneally, and, ten minutes later, 25 mgm. of 'Benadryl' was given by intraperitoneal injection. None showed convulsions, and all the animals survived. Similar experiments were repeated with twelve guinea pigs (mean weight, 625 gm.) in which a larger dose of 'Benadryl' was used. Six were given 50 mgm. of 'Benadryl' intraperitoneally and all the animals died following severe convulsions. In the other six guinea pigs, 1 mgm. of 'Aminopterin' intraperitoneally was given, and ten minutes later 50 mgm. of 'Benadryl' was injected by the intraperitoneal route. All the animals developed convulsions and only two recovered.

These experiments indicate that 'Aminopterin' is able to prevent the guinea pigs from going into a convulsive state and from death when a dose of 40 mgm. per kgm. of 'Benadryl' is used. Using larger doses of 'Benadryl', the protective action of the 'Aminopterin' is decreased or lost.

V. TRAINA

Department of Pathology,
Fairview Park Hospital,
Cleveland, Ohio,
Feb. 27.

- ¹ Seeger, D. R., Amth, J. M., jun., and Hulquist, M. E., *J. Amer. Chem. Soc.*, **69**, 2567 (1947).
² Franklin, A. L., Stokstad, E. L. R., and Jukes, T. H., *Proc. Soc. Exp. Biol. and Med.*, **67**, 398 (1948).
³ Minnich, V., and Moore, C. V., *Fed. Proc.*, **7**, 276 (1948).
⁴ Oleson, J. J., Hutchings, B. L., and Subbarow, Y., *J. Biol. Chem.*, **175**, 859 (1948).
⁵ Farber, S., Diamond, L. K., Mercer, R. D., Sylvester, R. F., and Wolff, J. A., *New England J. Med.*, **238**, 787 (1948).
⁶ Thiersch, J. B., and Phillips, F. S., *J. Pharm. and Exp. Ther.*, **95**, 303 (1949).
⁷ Karnofsky, David A., Patterson, Priscilla A., and Ridgway, Lois P., *Proc. Soc. Exp. Biol. and Med.*, **3**, 447 (1949).
⁸ Higgins, Geo. M., *Blood*, **4**, 1142 (1949).
⁹ Wagley, P. F., and Morgan, Herbert R., *Arch. Path.*, **46**, 441 (1948).
¹⁰ Franklin, A. L., Stokstad, E. L. R., and Jukes, T. H., *Proc. Soc. Exp. Biol. and Med.*, **67**, 398 (1948).
¹¹ Gruhzt, O. M., Finken, R. A., *J. Pharm. and Exp. Ther.*, **89**, 227 (1947).
¹² Rievvesh, G., and Gruhzt, O. M., *Fed. Proc.*, **3**, 150 (1945).
¹³ Gruhzt, O. M. (personal communication).

South African Fossil Hominoids

PROF. LE GROS CLARK¹ seems to have misunderstood the point of my communication² about the South African fossil hominoids. I have nowhere claimed that "the major dimensions and indices of individual teeth can by themselves provide adequate information on which to base statements regarding affinities of primitive hominids and anthropoid apes". The object of my note was to show that adequate comparisons by proper statistical procedures fail to substantiate a commonly stated view that the teeth of the South African Australopithecine apes differ significantly in size and general shape from those of existing apes. Whatever its other purpose, his letter may, however, help to underline the object of my communication and of the studies on which it was based.

Both in his letter and in an earlier communication³, Prof. Le Gros Clark states that he bases his conclusions on a comprehensive view "of the total morphological pattern", and that he does not rely on "a few metrical features considered as isolated abstractions". Whatever he may mean by "total morphological pattern"—and its meaning cannot be very much different from the term "constellation of characters" or "character complex" more commonly used in taxonomy—it is compounded of an arbitrary and variable number of different items, and is no less an abstraction than the dimensions of individual teeth. Furthermore, it comprises both metrical and "qualitative" features. For example, Prof. Le Gros Clark refers to "the small size (relative and absolute) and the spatulate form" of the (permanent) canine; the "small (permanent) incisors" and "the shape and dimensions (relative and absolute) of the milk canine". Most of these attributes can easily be given proper numerical definition. Some others referred to by Prof. Le Gros Clark do not lend themselves so readily to quantitative statement.