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3725

Antagonistic Action of Anesthetics and Alkali Metal Ions on Permeability of Cell.

J. F. MC CLENDON.

From the Marine Biological Laboratory, Woods Hole, and the Laboratory of Physiological Chemistry, University of Minnesota Medical School.

Some years ago in experiments on pike eggs, I showed that there is an antagonism between the action of Na ions which increased the permeability of the plasma membrane and anesthetics which prevented the increase in permeability. Anesthetics in large doses, however, increased the permeability and killed the eggs. It was not shown that anesthetics ever decreased the normal permeability. At Woods Hole, Mass., I recently performed similar experiments on Fundulus eggs. Isotonic solutions of $NaHCO_3$ and of the nitrates of Ca and Na were made and mixed so as to reproduce the cations in about the same concentrations as in sea water. In this solution or in distilled water practically no chlorides diffused out of the eggs. A micronephelometer was made by painting black the sides of the plungers of a (B. & L.) microcolorimeter, removing the mirror and illuminating it with parallel, horizontal rays. Ten mg. of KCl in a litre of H_2O was taken as the standard. One cc. of the standard + 1 drop of 10% $AgNO_3$ (acidified with HNO_3) was compared with 1 cc. of the unknown + 1 drop of $AgNO_3$ sol.* 100 eggs, washed until free from chlorides, were placed in 2 cc. of the solution. At the close of the experiment 1 cc. was removed for examination and the chloride content recorded in terms of the standard. Although sea water has a pH of about 8, the exosmosis of Cl^- was lowest at pH of 7 and less at pH 5 than at pH 8.

* Control experiments showed that 2% alcohol did not interfere with the determination of chlorides.

Solution	Exosmosis of Cl⁻ in 8 hrs.	16 hrs.
0.1 N $NaNO_3$	0.009	0.60
" " containing 1% ethyl alcohol	0.006	0.28
" " " 2% " "	0.006	0.25
0.2 N $NaNO_3$		0.50
" " " 2% " "		0.27
Distilled water		0.18

From experiments not given in detail it appears that Na^+ and OH^- increase the permeability and Ca^{++} and H^+ inhibit their action. Alcohol has a similar effect to Ca^{++}.

3726

Iodine Content of Some Water Supplies in Goitrous Regions.

GERTRUDE HUMPHREY BECKWITH. (Introduced by J. F. McClendon.)

From the Laboratory of Physiological Chemistry, University of Minnesota.

The following determinations of iodine in drinking water of goitrous regions are uniformly low, except in the case of Lasalle, Ill. Lasalle has 2 water supplies. It is stated that there is less goiter among those persons drinking water from these drift wells than the other source of supply, which was not analyzed.

Source		Iodine Parts per billion
Litchfield, Illinois	Impounding Reservoir	0.17
Chicago	Lake Michigan	0.13
Peru, Illinois	Rock Wells (1300 ft.)	0.31
Peoria, Illinois	Drift Wells	0.15
Lasalle, Illinois	Drift Wells	18.00
E. St. Louis	Mississippi River	0.29
Champaign-Urbana	Drift Wells	1.01
Murphysboro, Illinois	Big Muddy River	0.30
Springfield, Illinois	Direct from Wells	0.50
Springfield, Illinois	Filtration Galleries	0.52
Duluth, Minnesota	Spring	0.014
Grantsville, Utah		1.33