myasthenia gravis was about the same as the percentage defect in the synthesis of acetylcholine in the presence of serum from the same patient.[4]

DISCUSSION

H. C. Stoerk and E. Morpeth,[6] using rat brain as a source of the enzyme, found the same amount of acetylcholine synthesized in the presence of serum from patients with myasthenia gravis as in the presence of serum from control subjects. Since they also were unable to demonstrate any difference in the amounts of acetylcholine synthesized in the presence of serum from control subjects as compared to Locke's solution, it would appear as though their adaptation of the method of Quastel, Tennenbaum and Wheatley, using rat brain, is not sensitive enough to demonstrate slight differences in the synthesis of acetylcholine due to the presence or absence of substances in the serum of patients with myasthenia gravis. This lack of sensitivity is probably due in the main to the greater lability and the relatively lower concentration of the enzyme and to the chemical properties of the substances contained in the rat brain.

SUMMARY

Human spinal fluid is a more favorable medium to further the synthesis of acetylcholine *in vitro,* using enzyme obtained from frog brain, than is serum. Also, since less acetylcholine was synthesized in the presence of spinal fluid from patients with myasthenia gravis than spinal fluid of control subjects, it is probable that at least some of the factors responsible for the decrease and increase of the synthesis of acetylcholine pass into the spinal fluid.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

THE MEASUREMENT OF "FOLIC ACID"

DURING the past few years we have been interested in measuring the "folic acid" activity of the liver concentrates which we have been using in animal experiments. Both the *Streptococcus lactis* R and *Lactobacillus casei* e methods have been used[1, 2, 3] and certain improvements have been made in each case.[4, 5] However, many difficulties are still encountered in any attempt to express the activity of a given preparation so that results in different laboratories may be compared. We have found Table 1 to be useful in comparing the results of different workers, and we hope it may be useful to others.

The columns in the table labeled "½ maximum" indicate the approximate number of micrograms of material which provides one half of the maximum growth (as measured by turbidity) or acid production (as measured by titration) per 10 ml of complete medium. Although rather large differences may occur between the turbidimetric and titrimetric methods, these val-

TABLE 1

Material	Source	Investigator	S. lactis R		L. casei e	
			½ maximum	Potency	½ maximum	Potency
			ug.		ug.	
1. Lederle crystals	Liver	Stokstad[6]	.0025	78,000	.00055	79,000
2. Lederle crystals	Yeast	Stokstad[6]	.005	38,000	.0005	75,000
3. Lederle crystals	?	Hutchings[7] *et al.*	.042	5,000	.00061	70,000
		Luckey[4]	.05	2,000	.0035	10,000
		Teply[5]	.1	3,500	.0012	13,000
4. Parke Davis crystals (Bc)	Liver	Pfiffner[8] *et al.*			.0005	
		Luckey	.0013	77,000	.0013	27,000
		Teply	.004	88,000	.0004	40,000
5. Merck crystals	?	Keresztesy[9] *et al.*		*		*
6. Texas preparation A	Spinach	Luckey	.004	25,000	.002	21,000
Texas preparation B	Spinach	Teply	.027	13,000	.0027	6,000
7. Thymine	Synthetic	Luckey	2	50	4	9
8. Solubilized liver	Pork	Luckey	100	1	35	1
		Teply	350	1	16	1
9. Liver fraction B	Pork	Texas group		1		1
		Stokstad (calculated)	200	1	40	1
		Luckey	90	1	70	.5

* Potency for this material is unpublished; however, calculations from footnote 9 indicate it to be 140,000 times as active for *Streptococcus lactis* R as for *Lactobacillus casei* e.

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ues are more reliable than the values listed under "potency," since "potency" values depend upon one more variable, that of the initial standard. "Potency" values express the number of times more active a substance is than the standard (potency 1) and are useful to compare the results of different methods of assay. The "½ maximum" values for solubilized liver obtained in the turbidimetric method of Luckey vary considerably from those obtained in the titrimetric method of Teply, but the potency values obtained when solubilized liver is used as the standard agree quite well.

Methods of designating "folic acid" activity which have been used are:

(1) Snell-Peterson unit[1]: The weight of sample needed to produce one half maximum growth or fermentation in 10 ml of a defined medium.

(2) The empirical method[2]: Amount of "folic acid" (potency 40,000). (When this method was inaugurated the Texas group estimated the pure "folic acid" should be 40,000 times as active as their standard.)

(3) Williams milligram unit[10, 11]: The number of milligrams of material of potency 40,000.

(4) Snell milligram unit[12]: This unit is based upon one milligram of the standard (potency 1).

(5) Per cent. purity[9]: This method is based upon material of 40,000 potency arbitrarily set as pure.

(6) Per cent. activity[13]: The activities of the sample and the standard are compared on a percentage basis.

(7) Direct method: Equivalent weight of a crystalline standard. Only an equivalent weight can be expressed since a given sample may contain more than one compound in the folic acid group.

The existence of these various standards, methods and units indicates the need for establishing a uniform procedure for measuring "folic acid" activity.

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AN INEXPENSIVE DECOMPRESSION CHAMBER

WITH the increasing interest in recent years in problems of aeronautics, no doubt many attempts to investigate problems in this field would be undertaken if a decompression chamber were available. It has been our experience that very satisfactory work can be done in this regard with an old type bed sterilizer still attached to a steamline.

The sterilizer we have access to is manufactured by the American Sterilizer Company, rectangular in shape with inside dimensions of $36'' \times 42'' \times 84''$. By disconnecting, for safety's sake, all the steamlines and valves to the chamber with the exception of the one leading past the evacuation valve connected to the inside of the chamber, we contrived a simple but effective decompression chamber which can be evacuated at such a rate that an altitude equivalent to 35,000 feet can be reached in 12 minutes. By adjusting the evacuation valve, any desired altitude below 35,000 feet can be maintained for several hours without any appreciable fluctuation.

To make an observation window or opening through which light, telephone cords or oxygen lines could pass, holes were drilled in one of the doors and sealed with screw caps and plates so that any necessary change for future experimentation could conveniently be made. Up to the present time we have used our chamber to take x-ray pictures of the gastrointestinal tract of dogs at various altitudes and to record various sensations in man when taken to high altitudes.

By removing the x-ray tube we have found that two subjects, and if necessary three, can quite comfortably sit in the chamber at one time. By using an electric fan in the chamber and circulating a constant stream of water through the outside jacket of the chamber, the subjects within the chamber remain quite comfortable. Under these conditions, going to and from altitudes of approximately 30,000 feet, the temperature does not vary more than 6° F. and the relative humidity remains between 62 and 65 per cent.

This type of chamber is easily and cheaply equipped and is adaptable for various types of short- or long-time experiments. This, along with the fact that the chamber can at any time be reconverted to what it was originally used for, commends it for more extensive use.

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