

Life Sciences Notes

BIOCHEMISTRY

Protein Linked to Brain Disorder

Mental retardation and other brain disorders may be linked to the sharp decrease in protein manufacture in the brain at birth.

After birth, the brain reduces its use of a critical amino acid in making protein. This amino acid, called phenylalanine, is essential to growth in infants. If there is a decrease in brain protein synthesized from phenylalanine during a vital period of prenatal growth, damage to the central nervous system may result.

In studies with miniature pigs, four Nebraska researchers showed the decline in protein synthesis to be related to birth itself, rather than to the age of the fetus. It is possible, they conclude, that brain disorders often associated with premature birth may develop because brain protein synthesis was slowed too soon. Though the protein decline has been identified, the biological mechanism that causes it remains unknown.

Babies with the mental disease PKU (short for phenylketonuria) lack an enzyme to metabolize phenylalanine (SN: 12/24/66).

Drs. Richard J. Schain, Michael J. Carver, and John H. Copenhaver of the Nebraska Psychiatric Institute, Omaha, and Dr. Norman R. Underhall of the University of Nebraska, Lincoln, reported their work in the May 19 issue of SCIENCE.

PATHOLOGY

DMSO Increases Liver Damage

DMSO, or dimethyl sulfoxide, a chemical with remarkable ability to penetrate tissue, significantly exaggerates liver damage in rats with carbon tetrachloride poisoning, London scientists report. Drs. J. W. Freston and I.A.D. Bouchier of the Royal Free Hospital suggest increased liver injury may occur because DMSO extends the time carbon tetrachloride is retained in tissue.

They noted this "unusual property" of DMSO while using it in combination with antihistamines being studied as protective agents against liver damage in carbon tetrachloride poisoning.

On the basis of their research, the doctors suggest toxicity studies on DMSO include its action when used in combination with other drugs.

Uncontrolled use of DMSO a few years ago led to tight restrictions by the Food and Drug Administration which first curtailed its use in all clinical experiments (SN: 12/17/66). Evidence of its value in treating certain skin diseases, however, caused FDA to allow doctors to use DMSO in special cases of serious skin disorder. Now, FDA is expected to loosen its restrictions once again, allowing investigational use of DMSO in treating minor cuts and bruises.

VIROLOGY

Military Gets Respiratory Vaccine

An oral vaccine has been used successfully to combat a flu-like disease particularly prevalent among military recruits. The vaccine attacks the adenovirus 4 that is associated with acute respiratory illness.

The tablet, developed by scientists at the National In-

stitute of Allergy and Infectious Diseases, Bethesda, Md., releases live viruses in the intestines where it causes a symptom-free infection that stimulates the production of antibodies.

BIOLOGY

Joint Information Council

In an effort to study and improve channels of communication among biologists, four societies have formed a Council of Biological Sciences Information.

Biologists have no single professional organization similar to the American Chemical Society or American Medical Association, and therefore, have no central pipeline for information exchange, says Dr. Raymund Zwemer, secretary of COBSI. The Council, which has held only a few meetings, plans to see if a systems approach to organizing conferences and publishing research would help communications.

The four member societies are the American Association for the Advancement of Science, the American Institute of Biological Sciences, the Federation of American Societies for Experimental Biology and the Council of Biology Editors.

BIOCHEMISTRY

Amino Acids Regulate Eye Growth

The development of the eye is dependent on the role two amino acids play during fetal growth, a University of California scientist says.

In experiments on the effects of nutrition on chick embryos, Dr. C. R. Grau found that when the amino acid methionine is missing from the intrauterine food supply, there is degeneration of nerve tissue in the developing eye.

If tyrosine, another amino acid, is missing, there will be no pigmentation.

Amino acids for development are transferred to the chick embryo through yolk in the hen's eggs where blood proteins are concentrated.

BIOCHEMISTRY

Brain Chemicals Affect Cancer

Chemicals produced by the hypothalamus, a structure in the brain, affect the development of cancer, researchers report.

By burning out a tiny section of the hypothalamus in rats, the incidence of breast cancer can be markedly reduced, according to Dr. Joseph Meites of Michigan State University, East Lansing, and James A. Clemens of the National Institutes of Health, Bethesda, Md.

They injected the animals with a known cancer-inducing agent called DMBA. Ninety-five percent of control rats given DMBA developed tumors. But only 30 percent of those with a partially destroyed hypothalamus got cancer. Hypothalamic burning and removal of the ovaries cut the incidence of cancer in rats to zero.

Dr. Meites suggests a hormone factor in the hypothalamus, along with ovarian hormones, is necessary for the growth of tumors in rats.