life sciences

TOXICOLOGY

Effects of monosodium glutamate

Several recent reports have shown monosodium glutamate, a substance widely used as a seasoning, to have a toxic effect on the central nervous systems of infant animals (SN: 8/29/70, p. 172). As a result of this discovery, MSG is under investigation by a committee of the National Academy of Sciences.

Drs. Bernard L. Oser, Steven Carson, Eugene E. Vogin and G. E. Cox of the Food and Drug Research Laboratories, Inc. in Maspeth, N.Y., administered doses of MSG, monopotassium glutamate, sodium chloride, sodium gluconate and distilled water to rats, mice and beagles. The variety in substances, they explain, would have enabled them to examine the separate effects of both the sodium and glutamate parts of MSG. The doses were administered both subcutaneously and orally, and, since MSG has been used in baby foods, the age of the test animals was also taken into account.

But examination of the eyes and certain brain tissues of the animals showed no significant differences between test and control animals for any of the variables—solution administered, method of administration or age, the researchers report in the Feb. 5 NATURE. They offer no explanation for the difference between their findings and those of previous researchers.

BIOCHEMISTRY

Fertilized ovum transferred to uterus

Last month, Dr. Landrum B. Shettles of Columbia University's College of Physicians and Surgeons reported growth of a human blastocyst in a petri dish (SN: 2/13/71, p. 116). At that time, he was prevented from taking the next step of transferring the ovum to a human uterus.

Dr. Shettles reports now that he has accomplished this phase. As in the previous experiment, he removed a mature ovum from a patient, placed it in its follicular fluid in a petri dish, fertilized and incubated it until, after five days, it reached the blastocyst stage.

He then used a tuberculin syringe to plant the blastocyst in the uterus of a recipient. Two days later, the recipient underwent a hysterectomy and the blastocyst, now seven days old and grown to several hundred cells, was removed.

The blastocyst, Dr. Shettles reports, appeared as normal as those recovered in classic studies of ova fertilized *in vivo*. No indication that development could not have continued was discernible, Dr. Shettles concludes.

PESTICIDES

DDE effects on bone formation

During the past few decades, residues of certain chlorinated hydrocarbons, such as DDT and DDE, have caused declines in populations of various birds by reducing their reproductive success. These pollutants cause birds to lay eggs with abnormally thin, uncalcified shells that break easily and cause the death of the embryo. Chlorinated hydrocarbons affect estrogens, which are produced in increased amounts before egg laying and which mediate deposition of calcium in the hollow parts of the skeleton as well as in the shells.

Chlorinated hydrocarbons should therefore reduce bone formation as well as eggshell calcification, reason Mark I. Oestreicher, Deborah H. Shuman and Dr. Charles F. Wurster of the State University of New York at Stony Brook.

The researchers injected seven groups of male pigeons with doses of an estrogen while feeding them DDE. They report in the Feb. 19 NATURE that after four weeks bone formation in birds fed DDE was only 52.1 percent as much by weight as in birds not fed DDE.

BIOLOGY

Circadian rhythms

Rats allowed food and water whenever they desire it show a circadian rhythm of drinking and a close association of water intake with eating. Numerous studies of this association led researchers to conclude that the time-dependent variation in water intake depended solely upon the circadian rhythm of eating, but more recent studies have suggested a diurnal rhythm in drinking that was not influenced by eating.

Keith Oatley of the University of Sussex in England recorded the drinking and eating patterns of rats, first when the rats were fed whenever they liked and then at constant rates, with meals every hour or every 2.4 hours. Lighting in the laboratory simulated night and day.

He reports in the Feb. 12 NATURE that during the period when the animals ate and drank at will, most food and water was consumed at night. But when deprived of food, or fed on a regular schedule, the rats maintained the same drinking pattern, and the previously observed association of drinking with meals decreased. Oatley concludes that there appear to be separate circadian rhythms for drinking and eating.

PSYCHOLOGY

Personality and sleep

The popular notion that people who sleep a lot have different personalities from people who sleep only a few hours a night may be unfounded.

Dr. Wilse B. Webb and Janette Friel of the University of Florida asked entering freshmen for two years to designate the length of their typical sleep period. They then interviewed subjects who reported sleeping less than five and a half and more than nine and a half hours a night. Each subject was administered a number of personality tests. Data were also obtained on their scholastic and intellectual status and a number of physiological variables, such as blood pressure, hemoglobin and red-blood cell levels.

They report in the Feb. 12 SCIENCE that they could find no consistent trend that would distinguish the long and short sleepers. They caution, however, that this finding applies only to natural lengths of sleep, and that it does not mean that one's length of sleep may be altered without psychological consequences.

The researchers did, however, find slight differences in the amount of time long and short sleepers spent in different stages of sleep.