INSULIN ASSAY — Dr. Munevver Yennermen, endocrinologist at the National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, Bethesda, Md., making an assay of insulin level in a mouse.

BIOCHEMISTRY

Pills Protect From Rays

Scientists are busy looking for chemicals that will protect body from damaging radiation, although exact method by which the death blow is dealt is not known.

➤ PILLS WHICH will protect people against the deadly radiation of A-bombs are in the works for the future, experts in radiation have indicated.

Already a substance called cysteine protects mice against a lethal dose of X-rays. Dr. Harvey M. Patt of the Argonne National Laboratories, Chicago, said that, while it is not yet proved for any other species, including man, if he knew an A-bomb attack was imminent, he would swallow about two ounces of cysteine, a salty, bitter tasting substance.

Other scientists attending the radiation session of the American Physiological Society meeting in Chicago looked to other substances to give mass protection. Drs. Leonard J. Cole, Maurice C. Fishler and Victor P. Bond of the Naval Radiological Defense Laboratory, San Francisco, have found, pretty definitely, that the nucleus of cells of mouse spleen will protect other mice from deadly doses of radiation.

Their studies came out of a scientific argument over just what in spleens protects against radiation. It has been known for some time that the spleen had an important part in this protection. Some scientists believed that the live cells in the spleen were the factor. Others thought that certain chemicals which made up the spleen cells might do the job.

Dr. Cole and his associates divided the different parts of the cell from each other by homogenizing mouse spleen. They got material which they believed was essentially free of living cells. They found that protection was associated with the nucleus and not with the whole living cell. Other studies at the University of Chicago and at the National Institutes of Health, Bethesda, Md., tend to indicate that it is not living cells which provide the protection, the scientists said.

Even before mass protection is possible, scientists said, protection for those working around atomic power plants might work. For instance, Dr. Patt said, crews of atomic powered airplanes might not need so much shielding when an effective substance is developed. This would make it easier to get an A-powered plane off the ground.

Despite confidence in a future protective substance, the scientists still do not know how radiation deals its death blow. Huge doses of radiation, far above the lethal amount, seem to show that a poisonous substance is released in the body, Drs. Howard L. Andrews and Kirkland C. Brace of the National Institutes of Health told the meeting. The general opinion was that different things happened, depending on the kind of dose of radiation given, the manner of exposure and the time factor.

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BIOCHEMISTRY

Fat in Diet Protects From Radiation Damage

➤ A SVELTE figure in the atomic age is out.

Scientists have discovered that fat in the diet is a protection against atomic bomb radiation. Salad and cooking oils, margarine, mayonnaise and lard contain essential fatty acids which kept laboratory rats alive, even when they were subjected to critical doses of X-rays similar to those given off by an atomic blast.

The conclusion is that the people of the western world, who eat much more of the fat-containing foods than do those behind the Iron Curtain, are better protected against an A-bomb attack. People of the Orient do not eat foods containing such great amounts of fat.

Drs. Harry J. Deuel, Jr., dean of the University of Southern California Graduate School, and Amber L. S. Cheng, graduate student from China, tested 5,000 rats over a three-year period to discover the role of fatty acids in protection against radiation. They reported their results to the American Institute of Nutrition meeting in Chicago.

They also discovered that nothing, including the greatest amounts of mayonnaise on salads, would protect against fatal doses of X-rays given to the rats. This meant to the experimenters that only those far enough away to survive the concussion of the A-bomb would benefit from having had fat in their diet.

Dr. Deuel said that this does not mean that a person must be fat or overweight. However, he must have essential fatty acids in his diet.

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BIOCHEMISTRY

Chemical Helps Fight A-Bomb Burst Effects

➤ VICTIMS OF radiation from an A-bomb explosion may find protection against two major hazards—tendency to bleed and increased susceptibility to infection—with a chemical compound called protamine sulfate.

This combination of a protein and a salt of sulfuric acid at least works on rabbits which have been subjected to large doses

of X-rays. The rabbit experiment was reported to the American Physiological Society meeting in Chicago by Drs. H. G. Kupfer, John B. Parker and Rolin Meador of the Medical College of Virginia, Richmond.

Cause of the tendency to bleed is interference by radiation with the blood clotting mechanism. One injection of 45 milligrams of protamine sulfate 48 hours after the rabbits were irradiated prevented this interference with the blood clotting mechanism. When the compound was injected before the X-rays were directed at the rabbits, alteration of the blood clotting mechanism was reduced markedly, but not altogether eliminated, the scientists reported.

Irradiation seems to prevent the formation of infection-killing antibodies in the blood of humans as well as animals, the experimenters said. Again protamine sulfate comes to the rescue in irradiated rabbits. Red blood cells of sheep were injected in the irradiated rabbits. With protamine sulfate injected 48 hours after irradiation, the rabbits were able to produce antibodies to fight the foreign material at a rate significantly higher than that of a control group of rabbits. Protamine sulfate injected before irradiation does not do as good a job on antibody production.

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PUBLIC HEALTH

Poor Sanitation Aids In Immunity to Polio

➤ THE POOR sanitation and hygiene standards of many countries probably help keep down the rate of badly paralyzing infantile paralysis.

This seeming paradox was discovered when large numbers of Philippine monkeys were fed small daily doses of poliomyelitis virus. More than 50% of them, after having been fed small doses for 90 days, developed the non-paralyzing mild form of infantile paralysis. The rest proved to be markedly resistant to paralysis after swallowing large doses of virus.

However, a control group that did not receive the small doses for the 90-day period was different. When they were fed a large dose of virus, 62% of them developed paralysis.

"These results indicate," Drs. Albert B. Sabin and John Winsser of the University of Cincinnati College of Medicine told the American Association of Immunologists meeting in Chicago, "at least one of the ways in which populations with low standards of sanitation and hgyiene may acquire a high degree of immunity to poliomyelitis at a relatively low cost in paralysis."

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If a human family ate its *food* in proportion to a family of birds, the daily grocery list would include 50 loaves of bread, 25 pounds of hamburger, 30 doughnuts, 10 pounds of spinach, 6 heads of lettuce and a gallon of ice cream.

MEDICINE

Drug Halts Blood Cancer

➤ A DRUG that halts the blood cancer, leukemia, at least temporarily, was announced at the meeting of the American Association for Cancer Research in Chicago.

The drug is a new chemical called 6-mercaptopurine. It is given by mouth in tablet form, like an aspirin tablet.

It was synthesized by Drs. George H. Hitchings and Gertrude B. Elion of the Wellcome Research Laboratories, Tuckahoe, N. Y., and tested for anti-leukemia activity by Drs. Joseph H. Burchenal, David A. Karnofsky, M. Lois Murphy, Rose-Ruth Ellison and C. P. Rhoads of Memorial Center for Cancer and Allied Diseases, New York.

More than 100 patients have so far been given the new drug. Of 45 children with acute leukemia, 14 showed temporary disappearance of the disease for one to six months. Another 11 were substantially improved although the disease could still be detected by laboratory methods. Of these 25 children, 11 had previously been treated with one of the antifolic drugs, and had either been resistant to these drugs in the beginning or became so during treatment.

Of 18 adults with acute leukemia, three obtained complete though temporary regression of the disease from the new drug.

The supply of the chemical is limited and for this reason it is being distributed to a small group of clinical investigators by Wellcome Research Laboratories.

The chemical is considered particularly interesting because its mechanism of action is different from that of other agents used in treatment of human cancer. It is thought to damage the cancer cell by interfering directly with its manufacture of nucleic acids, vital components in cell reproduction and function.

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MEDICINE

New Schizophrenia Aid

➤ A NEW experimental treatment for schizophrenia which may prove to be better than electric shock treatment has been developed.

The treatment uses a chemical cousin of isoniazid, the new TB wonder drug, and flashing lights in the eyes to produce convulsions. A group of psychiatrists and pharmacologists at the University of Illinois College of Medicine tried the treatment on 37 patients, all of whom had been hospitalized for more than two years, one as much as ten years. They had not been helped by previous treatment such as insulin coma, metrazol convulsions or electroshock therapy.

Six of the patients have now been discharged after the new treatment, Dr. Carl C. Pfeiffer, professor of pharmacology at the university, reported to the American Society for Pharmacology and Experimental Therapeutics meeting in Chicago.

Fifteen of the patients, including the six discharged, showed remission of the mental disease. Eight of these 15 have had relapses, but all of 37 had some improvement.

A control group of 39 patients received similar treatment except that in place of the drug, semicarbazide, a harmless placebo pill was given. Of these, only two showed any improvement at all.

Now the group is conducting experiments to determine whether this new treatment is better than electroshock, so far the most successful in the therapy of schizophrenia. The treatment lasted four weeks and only eight to ten convulsions were induced in each patient.

A large dose of the chemical makes the patient susceptible to a convulsion when a light is flashed into his eyes 14 to 20 times. The convulsion comes on slowly and muscular rigidity occurs much more slowly than with electroshock therapy.

The group who did the work with Dr. Pfeiffer consists of Drs. Richard W. Reilly, Marianne W. Gunther, Joseph Tienstra, Mahmood Sajjadi, Paul S. Weiner, Arthur Ellerd, and Theodore Tausig of the university and Manteno State Hospital, Manteno, Ill.

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MEDICINE

Coat Over Ulcers New Protection Method

➤ PROTECTION AGAINST ulcers—the disease of American civilization—might be achieved by putting a coat over the ulcers. It works in rats and guinea pigs, two scientists reported at the Chicago meeting.

Drs. Mark Nickerson and Charles F. Curry of the department of pharmacology, University of Michigan School of Medicine, said that this kind of protection has been given little attention compared with the attention given other kinds of treatment.

However, they said, feeding a suspension in water of several kinds of siloxanes, put a tough coating over eroded areas of the stomach and duodenal tract.

This afforded almost complete protection against gastric erosion, the scientists said, while control animals died within five days. The ulcers were artificially produced by injecting histamine.

Science News Letter, April 18, 1953