

## BIOCHEMISTRY

# How Globulin Is Made

Substance being tried as infantile paralysis preventive is manufactured by the body as second stage of blood serum protein synthesis.

► BLOOD SERUM globulin, source of the disease-fighting antibodies and the material now being tried in the United States as an infantile paralysis preventive, is manufactured by the body in small granules called mitochondria in the cytoplasm of cells.

This location for globulin and antibody manufacture was announced as a "tentative" conclusion by Dr. Felix Haurowitz, professor of chemistry at Indiana University, Bloomington, Ind., at the Second International Congress of Biochemistry in Paris.

Manufacture of globulin is the second phase of blood serum protein synthesis in the body, Dr. Haurowitz finds. In the first phase a single, one-molecule-thick layer of a peptide, formed by a combination of amino acids, is reproduced and a new layer, a replica of the first, is formed.

In the second phase of protein synthesis, the newly formed peptide layer folds up to give a three-dimensional globular protein molecule.

Both these phases are highly specific. The first phase, of the single molecule thick peptide layer, has a primary specificity. The same pattern is formed for a given animal species, and the specificity is handed down from one generation to another. It is this

specificity that accounts for the difference between rabbit serum protein and dog serum protein and human serum protein. Probably this phase of primary protein pattern formation takes place in the nucleus of the cell, although there are as yet no experiments to prove this.

The secondary phase, which takes place outside the nucleus in the granules of the cytoplasm, could be located at least tentatively because this phase of protein formation can be altered by the use of antigens. Antigens are substances, such as disease germs and their toxins, which call up antibody formation.

Antibodies are modified serum globulins. They are formed instead of normal serum globulins. Antibody formation may therefore be considered an aberration of normal serum protein synthesis. The peptide chain of the first phase of protein synthesis folds in a different way when antigen is introduced.

Antigens labelled by radioactive isotopes were used by Dr. Haurowitz to locate the site of the secondary folding up phase, of protein formation, in this case antibody formation.

Science News Letter, August 2, 1952

## ENTOMOLOGY

# Way to Stop Chiggers

► TINY CHIGGERS, cause of much summertime misery, can be attacked where they live by chemical dusts and sprays.

They are most often found in low, damp places well covered with vegetation, such as margins of lakes and streams, shaded woods, high grass or weeds, fruit orchards and berry patches. They may also be found on lawns, golf courses and parks.

A simple way to locate possible chigger areas is to put a piece of black cardboard edgewise on the ground and watch it for a few minutes. If you see small yellowish or pinkish mites moving rapidly over the cardboard and accumulating on the upper edge, you have located a chigger area.

Sulfur dust is the old stand-by for controlling chiggers on infested grounds. In recent years, however, a number of the newer insect killers have been found more effective. These include chlordane, lindane and toxaphene. They may be bought as dusts, wettable powders and emulsifiable concentrates. The last two must be mixed with water and applied as sprays.

Emulsion sprays will usually give the best results. A chlordane or toxaphene emulsion applied at two pounds or a lindane emulsion at one-quarter pound of the toxicant per acre will provide a high degree of control for one to two months. Wettable-powder sprays at the same dosages will give protection for two to six weeks, and dusts for one to four weeks. At one pound per acre toxaphene or chlordane applied as an emulsion spray is effective for one to two weeks, but the other formulations may not be effective at this dosage.

Apply these sprays at the rate of 20 to 25 gallons per acre, or about one gallon to 1,800 square feet. Cylindrical or knapsack-type hand sprayers may be used over small areas, but power equipment will be most satisfactory for large acreages.

Treat ground litter, soil, and the lower parts of plants with this spray.

Handle all insecticides with care. If you spill any on your skin, wash it off at once. Do not put them where they will get on fruit or vegetables or where livestock will

## • RADIO

Saturday, Aug. 9, 1952, 3:15-3:30 p.m., EDT  
"Adventures in Science," with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Wallace W. Atwood, Jr., chairman of the National Committee of the United States of the International Geographical Union and a geographer from some other part of the world, will discuss the "Geography of the World."

graze within two weeks after treatment. Keep children and pets out of the treated area until the spray dries or for two or three days.

Science News Letter, August 2, 1952

## INVENTION

## Radar Pops Popcorn For Machine Vending

► YOU SOON may be getting your popcorn at the movies from an automatic, coin-controlled machine which pops the corn by a form of radar. Cyril Miller, Altadena, Calif., has invented a machine which uses high frequency radiation to pop each helping of corn as a coin is placed in the machine. It received patent number 2,603,142.

Science News Letter, August 2, 1952

Authoritative New

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