ANNOTATION

Chemotherapy of Virus Infections

In recent years, antibiotics have proved effective against many bacterial and all rickettsial infections of man, but are only of limited value in virus infections. The so-called broad spectrum antibiotics—aureomycin, terramycin and chloramphenicol—are effective against the viruses of the psittacosis-lymphogranuloma group and those causing primary atypical pneumonia. Many substances are therefore being scrutinized for possible activity against the majority of viruses which are still insensitive to antibiotics.

Polysaccharide preparations from bacterial and other sources prevent multiplication of pneumonia virus of mice when given intranasally, thereby modifying the course of the disease (Horsfall and McCarty, 1947). The type-specific capsular polysaccharide of the Friedlander bacillus similarly inhibits mumps virus multiplication in the chick embryo (Ginsberg, Goebel and Horsfall, 1947). The mechanism of this antiviral effect is, at present, unknown, but the polysaccharide may compete successfully with some substance in the host cell which is essential for virus multiplication.

It is significant that the latest contribution to this field, helenine, should also be largely polysaccharide. This substance is present in the stationary cultures of *penicillium funiculosum* (Shope, 1953). This mould was isolated from the

isinglass cover of a photograph of Mrs. Helen Shope, hence its picturesque designation. It is therapeutically active against Columbia SK encephalomyelitis and Semliki Forest virus infections of mice. It appears to be virustatic rather than virucidal, either inhibiting multiplication of the virus or interfering with its neuroinvasiveness. Since it prevents an antibody response in the infected host it presumably destroys virus antigen, possibly acting at an earlier stage of virus multiplication than that at which specific antiserum is effective. An additive therapeutic effect was observed between helenine and specific antiviral serum.

It is difficult and dangerous to translate the favourable effects observed in experimental animal infections in terms of therapeutic benefit in naturally occurring virus diseases. However, it does reveal that a determined attack is being made and that polysaccharides may play an important part in the chemotherapy of virus infections.

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