NOTES

Sensitivity of Types 1 and 2 Herpesvirus hominis to an Interferon Inducer, Poly I:C

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Type 1 strains of Herpesvirus hominis were more resistant than type 2 strains to the antiviral effects of polyinosinic acid-polycytidilic acid in primary cultures of rabbit kidney cells.

During a study of the effects of the topical administration of an interferon inducer, polyinosinic acid-polycytidilic acid complex (poly I:C), on the experimental keratitis produced in rabbits by Herpesvirus hominis (HVH), it was noted that poly I:C was more effective in the treatment of the keratitis produced by a type 2 HVH strain than of the keratitis produced by a type 1 strain. This observation prompted an investigation of the relative sensitivity of various strains of HVH to the antiviral effects of poly I:C in vitro.

Three strains of type 1 (VR₃, Sheely, and Tyler) and three strains of type 2 (MS, Curtis, and Cornelius) of HVH were tested. For purposes of comparison, the Connaught strain of vaccinia virus (4) and the Indiana strain of vesicular stomatitis virus (VSV) were also tested. All of the viruses were passed and grown in primary cultures of rabbit kidney cells. Duplicate tube cultures of these cells were overlaid with 1-ml amounts of serial twofold dilutions of poly I:C (Miles Laboratories, Elkhart, Ind., Control no. 11-8-321), suspended in a culture medium for rabbit kidney cells (9 parts medium 199, 1 part heat-inactivated calf serum, 100 units of penicillin, and 100 µg of streptomycin). The tubes were incubated at 37 C for 20 hr and the fluids were decanted. Each tube was washed once with 2 ml of phosphate-buffered saline (pH 7.2) and inoculated with approximately 10⁵ 50% tissue culture infectious doses of the virus under investigation. Observations of the cytopathic effect (CPE) were made twice a day until the CPE in the virus control tubes had affected from 75 to 100% of the cell sheet (2 days after virus inoculation). The protective dose of poly I:C was expressed as the least amount of the compound that inhibited the CPE almost completely, as calculated by the Reed and Muench method (7).

The protective doses of poly I:C for three strains of type 1 HVH ranged from 40 to over 80 µg, but for three strains of type 2 they ranged from 2.5 to 10 µg (Table 1). Vaccinia virus was completely inhibited by 0.1 µg of poly I:C and VSV by as little as 0.06 µg.

These results confirm earlier observations that HVH was relatively insensitive to interferon

<table>
<thead>
<tr>
<th>Virus</th>
<th>Strain</th>
<th>Protective dose of poly I:C (µg)</th>
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</thead>
<tbody>
<tr>
<td>H. hominis</td>
<td>VR₃</td>
<td>&gt;80.0</td>
</tr>
<tr>
<td>Type 1</td>
<td>Sheely</td>
<td>&gt;80.0</td>
</tr>
<tr>
<td>Type 1</td>
<td>Tyler</td>
<td>40.0</td>
</tr>
<tr>
<td>Type 2</td>
<td>MS</td>
<td>10.0</td>
</tr>
<tr>
<td>Type 2</td>
<td>Cornelius</td>
<td>10.0</td>
</tr>
<tr>
<td>Type 2</td>
<td>Curtis</td>
<td>2.5</td>
</tr>
<tr>
<td>Vaccinia virus</td>
<td>Connaught</td>
<td>0.1</td>
</tr>
<tr>
<td>Vesicular stomatitis virus</td>
<td>Indiana</td>
<td>0.06</td>
</tr>
</tbody>
</table>

and interferon inducers (1, 3, 8, 9). They also reveal that degrees of insensitivity to poly I:C differed from strain to strain of a given type of HVH and differed more markedly from type to type. This strain difference in sensitivity to poly I:C may partially explain the differences noted in the efficacy of poly I:C by various investigators in the past (2, 5, 6); each investigator used a different strain of HVH for the production of the herpetic keratitis subsequently to be treated.
with poly I:C. The present study also indicates that the distinct difference in sensitivity to poly I:C between type 1 and type 2 HVH might serve as a useful type-indicator for HVH. Further exploration of this possibility would seem to be warranted.

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LITERATURE CITED


