INTERFERON PRODUCTION OF SPOTTED SOUSLIK

M. Kandefer-Szerszeń

Department of Applied Microbiology, Institute of Microbiology,
Maria Curie-Sklodowska University, 20—033 Lublin, Poland

Received January 11, 1984

Spotted souslik (*Spermophilus suslicus)*, and other species of ground squirrels, besides bats and hamsters, have been very often used in hibernation experiments (*1, 2*). Progress in understanding the physiology of hibernation has been slow, and a number of problems await clarification, as cell function at a low temperature, integration of the nervous and the endocrine systems or functions of the immunological system in natural hibernation. Interferon (IFN) has been described in some species of bats and hamsters (*3, 4*), but it has not been reported, that ground squirrels possess an IFN system. This communication presents our observations, that cell cultures of the spotted souslik produce IFN.

Primary cell cultures from cutaneo-muscular tissues of embryos (SE), lungs (SL) and kidneys (SK) of adult animals were cultivated in Eagle's MEM 1959 medium with 10% of calf serum and antibiotics. Secondary cell cultures were inoculated with vesicular stomatitis virus (VSV), Newcastle disease virus strains Radom (NDV-R) and Hertfordshire (NDV-H) and with vaccinia virus. All viruses examined were found to multiply in embryo cell cultures and in cells of adult animals.

NDV-R and NDV-H strains were used as IFN inducers. No differences were observed in IFN titres produced at different passages cells from organs of active or hibernating animals.

The optimum conditions for IFN production were as follows: stationary bottle cultures of cells were incubated at 37 °C until the monolayer became confluent. The cells were inoculated with NDV-R at the infection multiplicity of 10 $TCID_{50}$ per cell and incubated at 37 °C for 24 hr. The medium was harvested and acidified to pH 2 with 1 mol/l HCl. After 72 hr at 4 °C the medium was neutralized with 1 mol/l NaOH and centrifuged. The IFN titre was determined in SL cells by the micromethod of Stewart (*5*) using VSV for challenge. The amounts of IFN produced were: (in units per 10^6 cells) 1000 in SE cell cultures, 3200 in SL cells and 5120 in SK cells.

The IFN of the spotted souslik was sensitive to heating at 100 °C for 1 min, to treatment with trypsin, β-mercaptoethanol and to vigorous shaking, but it was insensitive to RNase digestion. It was not neutralized with antiserum against murine IFN. It exhibited antiviral activity in SL, SK and SE cells and also in human embryo fibroblasts, but it was not active in L_{929} cells and in chicken embryo fibroblasts. The results indicate that cells of spotted souslik are able to synthesize IFN and are sensitive to its action.

Acknowledgments. The author is grateful to Doc. Dr. A. Inglot, Institute of Immunology and Experimental Therapy in Wroclaw for providing the antiserum against murine IFN and for the helpful discussion.

References

1. Hudson, J., *Ann. Rev. Physiol.* **41**: 287, 1979.
2. Heller, H. C., *Ann. Rev. Physiol.* **41**: 305, 1979.
3. Stewart, W. E II., Allen, R., Sulkin, S. E., Bact. *Proc.* 283, 1969.
4. Bollin, E., Sulkowski, E., *J. gen. Virol.* **52**: 227, 1981.
5. Stewart, W. E. II. *The Interferon System*, Springer-Verlag, Wien, New York, 1979.