

THE INTERFERON SYSTEM: CHARACTERIZATION OF INTRASPECIFIC MOUSE HYBRIDS

P. Kontsek, V. Lackovič, L. Borecký

Institute of Virology, Slovak Academy of Sciences, 817 03 Bratislava, Czechoslovakia

Received December 3, 1981

Intraspecific mouse hybrid cells were used for characterization of interferon (IFN) production, as well as of antiviral and antiproliferative effects of homologous IFN.

Mouse fibroblasts L-929 (strain LB2 revealing a low IFN-producing ability) were fused with mouse peritoneal macrophages (PMf) showing high IFN-producing capacity. PMf were harvested from the peritoneal cavity of Swiss mice without any previous irritation. Cells not adhering to glass were removed. UV-light inactivated Sendai virus was used to achieve fusion (2). The hybrids were selected in medium HAT containing 5% inactivated calf serum (6); from the 6th passage clones were maintained in medium BEM supplemented with 5% ICS. The mean number of chromosomes as compared to that of parental cells was higher in each hybrid clone. In the course of passaging, the mean number of chromosomes in hybrids decreased (4).

IFN was induced by Newcastle disease virus strain B1 (NDV-B1). The antiviral effect of IFN was determined by inhibition of the cytopathic effect of encephalomyocarditis (EMC) virus (5). The antiproliferative effect of IFN was estimated according to its ability to suppress cell growth (1). The hybrid clones (designated L × PMf 1–5) produced the same amount of IFN than the parental cells revealing high IFN producing capacity (Table). This is compatible to results of other investigators (8). The antiviral and antiproliferative effect of homologous IFN in intraspecific hybrid cells was 3–8 times higher as compared to parental cells. This is in accordance with the data of Jarvis (3). The enhanced susceptibility of intraspecific hybrids to IFN after fusion probably occurs due to the synergic condominant action of parental genes coding for IFN receptors.

Cells	Mean number of chromosomes ¹⁾	IFN production ²⁾ (IFN titre/ml)						IFN effect					
		antiviral ³⁾		antiproliferative ⁴⁾		antiviral ³⁾		antiproliferative ⁴⁾					
L-929	51	32,	32,	64,	32,	16*	64,	64,	32*	58,	62,	60*	
PMf	40	512,	128,	128,	256*		64,	32,	64*		NT		
L × PMf-1				256				512			22		
L × PMf-2				128			1024				18		
L × PMf-3				64				512			25		
L × PMf-4				256				256			20		
L × PMf-5				256				512			20		

NT — tested; ¹⁾ — 30 mitoses counted; ²⁾ — tested in L-929 cells challenged with EMC virus (dilution reciprocals); ³⁾ titre (dilution reciprocals) of standard mouse IFN tested in given cells; ⁴⁾ IFN units/ml causing 50% inhibition of the growth of cells in question; *data from several trials.

References

1. Fuchsbereger, N., Hajnická, V., and Borecký, L., *Acta virol.* **19** : 59, 1975.
2. Harris, H., and Watkins, J. F., *Nature (Lond.)* **205** : 640, 1965.
3. Jarvis, A. P., Ozer, H. L., Colby, C., *Somat. Cell Genet.* **4** : 677, 1978.
4. Kontsek, P., Lackovič, V., and Borecký, L., *Acta virol.* **36** : 203, 1981.
5. Lackovič, V., and Borecký, L., *Arch. ges. Virusforsch.* **17** : 619, 1965.
6. Littlefield, J. W., *Exp. Cell Res.* **41** : 190, 1966.
7. Rothfels, K. H., and Siminovitsh, L., *Stain Technol.* **33** : 73, 1958.
8. Veomett, M. J., and Veomett, G. E., *Somat. Cell Genet.* **6** : 325, 1980.