

INHIBITORY EFFECT OF INTERFERON ON CELL FUSION BY SENDAI
VIRUS AND POLYETHYLENE GLYCOL

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The influence of homologous interferon (IFN) on intraspecies mouse cell fusion was investigated. Hybrid cells were obtained by fusion of Ehrlich's ascitic tumour cells (EAC) with L-929 (HGPRT⁻) mouse fibroblasts. The fusion of parent cells was induced by UV-inactivated Sendai virus or by polyethylene glycol. After 10 days' cultivation in HAT medium, the number of growing hybrid cell colonies was determined. Mouse IFN was induced in mouse peritoneal macrophages with NDV-B1 virus. Before fusion, one parent cell line was always incubated in vitro for 24 hr at 37 °C in the presence of different mouse IFN concentrations (the vitality of cells was estimated by their vital staining) and then it was fused with the other IFN-untreated cell line.

Results showed the following: 24 hr incubation of L-cells in the presence of IFN before their fusion with IFN-untreated EAC inhibited the formation of hybrid cells (Table). This effect raised with increasing concentration of IFN in the medium and was observed in hybrid cells induced by Sendai virus as well as by polyethylene glycol. Our finding of suppressive effect of IFN on virus-induced cell fusion is in accord with that of Tomita and Kuwata (3), who first described this phenomenon. Moreover, our results indicate that IFN also inhibits cell fusion induced by polyethylene glycol, a non-viral fusion agent. In vitro incubation of EAC with IFN before fusion did not inhibit their ability to fuse with IFN-untreated L-929.

	Parent cells treated before fusion with IFN (units/ml)	Antiproliferative IFN effect (% of control cells)	Number of hybrid colonies per 10 ⁶ L-929 cells ^a induced by			
			Sendai virus		polyethylene glycol	
			\bar{x}	(% of con- trol cells)	\bar{x}	(% of con- trol cells)
L-929	100	20	19	23	20	35
	25	45	38	46	31	53
	5	90	64	78	44	76
	0	100	82	100	58	100
EAC	100	n.c. ^b	31	103	13	108
	25	n.c.	28	93	10	83
	5	n.c.	27	90	11	92
	0	n.c.	30	100	12	100

^a Mean values from 4 experiments.

^b Not calculated because EAC did not grow when cultivated in vitro for 24 hr at 37 °C.

It is probable that the IFN-induced resistance to fusion is mediated by active metabolic events (3) resulting in an increased rigidity of target cell cytoplasmic membrane (1). These events are unlikely to occur in silent, non-growing cells, such as EAC in vitro (2).

References

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