

INTERACTIONS OF PORCINE ENTERIC CORONAVIRUS TGEV
WITH MACROPHAGES AND LYMPHOCYTES

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Enterocytes covering the microvilli of small intestine are the only target cell of transmissible gastroenteritis (TGEV) that have been characterized until now. Such a tropism has been shown to explain the severe intestinal disorders affecting infected animals. However, several authors mentioned isolation of TGEV from respiratory tract (1, 2, 3), and the possibility of extra-intestinal sites of replication was strengthened by recent studies on the systemic interferon (IFN) response of newborn piglets infected by wild or cell-adapted strains (H. Laude & C. La Bonnardière, to be published).

a) Multiplication of TGEV in alveolar macrophages. Adherent phagocytic cells derived from lungs of 6 months old pigs and maintained in culture are able to support TGEV replication, as proved by positive immunofluorescence, infectious virus release and IFN synthesis.

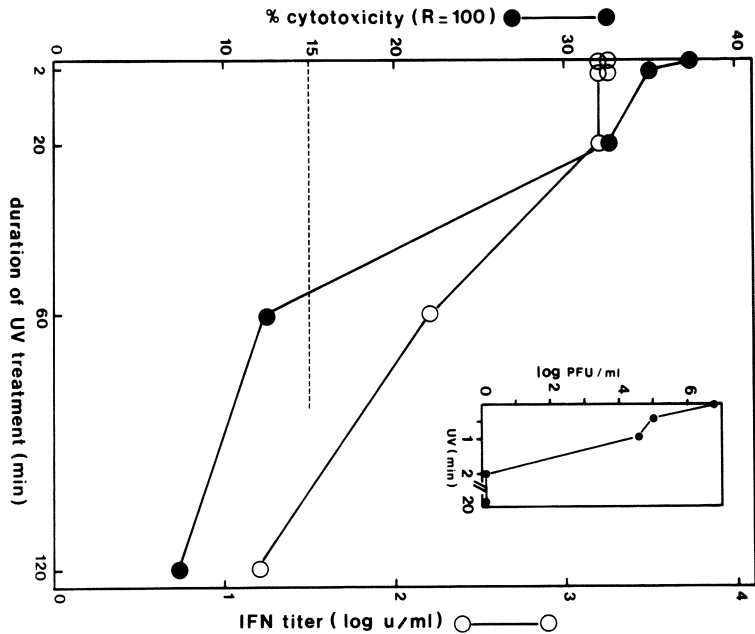
Table 1. Multiplication of cell-adapted strains of TGEV in macrophage cultures.

Virus Strain (1-3pfu/cell)	Cell viability ^{**} (% of control)		Infectivity titer (pfu / ml)		IFN titer ^{***} (MDBK units/ml)	
	Batch n°1	n°2	n°1	n°2	n°1	n°2
D52-5	39	42	1.2×10^5	9.5×10^4	470	250
6386-5	37	48	4.5×10^4	7×10^4	270	170
Purdue 115	26	35	4.5×10^5	1.1×10^5	1400	510
" +antiserum	>95	n.t.	$< 10^1$	n.t.	n.t.	n.t.
UV-inactivated	>95	n.t.	$< 10^1$	n.t.	≤ 10	n.t.

^{**} Measured by O.D. at 460 nm of neutral red intake (alcohol extract)

^{***} Determined as previously reported (4).

Fig. 1.
IFN and SCMC
activities
induced by
UV-irradiated
TGEV.



Extensive cell death was observed at virus input > 0.1 p.f.u./cell whereas prolonged and limited virus production occurred at lower m.o.i., indicating that TGEV replication may be controlled in this particular kind of cells. These *in vitro* results are in agreement with *in vivo* studies showing that both virus and IFN are associated to the cells collected by washing the lungs of infected animals (90 per cent being macrophages).

b) Effect of TGEV on lymphocytes : In contrast, no virus production could be induced in leucocyte preparations originating from blood, spleen or intestine. Nevertheless an IFN-activity was consistently present in TGEV-inoculated lymphocyte cultures, at a concentration which was shown to efficiently stimulate their spontaneous cell-mediated cytotoxicity (SCMC test performed as in 5). Equivalent interferon induction was obtained when using UV-irradiated non-infectious virus (Fig. 1).

These interactions of TGEV with immunocompetent cells call further attention because of their virtual implications in natural and acquired defence mechanisms.

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