Quantitative determination of latex recovered from Peyer's patches and remainder of small intestine

No. Latex suspension fed* (% solids)	N	Peyer's patches Tissue weight (g)	No. particles $\times 10^5$	Remainder Tissue weight (g)	No. particles $\times 10^5$
1.0	15	0.054 ± 0.016	2.13 ± 0.66	1.062 ± 0.248	1.78 ± 0.58
0.1	15	0.056 ± 0.013	1.42 ± 0.98	1.078 ± 0.227	1.04 ± 0.29
0.01	15	0.045 ± 0.008	0.18 ± 0.14	1.005 ± 0.176	< 0.05

Values are mean $\pm$ SD; N = number of mice; *Latex suspensions were withheld 2 weeks prior to sacrifice.

These studies indicate that inert particulates of considerable size can cross the mucosal barrier overlying Peyer's patches in intact animals. We estimate that 1 ml of 1.0% latex contained 2.7×10^9 particles and that each mouse given this concentration to drink ingested approximately 7×10^{11} particles in the 61-day test period. Mice receiving lower concentrations of latex ingested proportionately fewer particles. It is clear that the number of particles recovered from intestinal tissue was an extremely small fraction of the number ingested. Nevertheless, when viewed in the perspective of environmental and human health problems, the uptake and retention of even a few particulates by the intestine may be of great importance if the particulates are toxic, mutagenic or carcinogenic.

Rejection of worm load through singly and repeatedly sensitized peritoneal exudate cells during experimental ancylostomiasis

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Summary. Sensitized peritoneal exudate cells from Swiss albino mice donors infected with a single dose of 1000 *A. caninum* larvae could expel a challenge dose of 500 larvae from recipients at a faster rate when compared to cells from repeatedly infected (250 + 250 + 500) donors. However, at 36 h after challenge, the larval expulsion was almost the same in both the groups. Because of the bowel sensitization by the cells, some larvae (not expelled) in the 1st group, readily migrated into muscles where they met allergic immobilization and death due to infiltration of inflammatory cells and their exudates at these sites.

Transfer of immunity (cell mediated immune response or delayed hypersensitivity) from infected donors have been reported for a number of helminthic infections (Larsh et al.[2] with *T. spiralis* in mice, Wagland and Dineen[3] with *Trichostrongylus colubriformis* in isogenic strain of guinea-pigs, Miller[4] with *A. caninum* in experimental pups and Ogilvie and Jones[5] with *N. brasiliensis* in rats using lymphoid cells and Larsh et al.[6,7] with *T. spiralis* in mice and Lang et al.[8] with metacercaria of *F. hepatica* in mice using peritoneal exudate cells). Kim et al.[9] demonstrated that the response can also be produced by antigens of *T. spiralis*. While working on cell-mediated immunity during experimental infection of *Ancylostoma canium*, an attempt was made to investigate the effects of transfer of sensitized peritoneal exudate cells from singly and repeatedly infected donor mice, and the present communication provides evidence regarding development of strong immunity in recipients injected with sensitized cells from the former group of donors.

Material and method. Infective *A. caninum* larvae were cultured following the method of Sen et al.[10] and donor mice were infected according to the following schedule.

Table 1. Experimental schedule of infection to donor mice groups

Day	Sensitizing dose of *A. caninum* larvae to donor groups A (singly infected)	B (repeatedly infected)	C (uninfected control)
0	1000	250	–
7	–	250	–
14	–	500	–
21	Collection and transfer of cells from donors to recipients		
28	Challenge infection of 500 larvae to each recipient		

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Both donors and recipients were female mice with a b.wt of 20–23 g. Before collection of peritoneal cells, donors were flushed i.p. with buffered physiological solution containing 10% BSA and cells were collected and counted according to Katiyar and Sen[11] and Wintrobe[12] 21 days after infection. Within 4 h after collection, approximately 26×10^4 cells were injected i.p. into each recipient mice; group A received singly sensitized, group B repeatedly sensitized and group C non-sensitized (control) peritoneal exudate cells. 7 days after cell transfer, each recipient was challenged with a single dose of 500 infective *A. caninum* larvae and subsequent recoveries were made from different organs and muscles at 4-h intervals by the Baermann method after digestion in artificial gastric juice.

Results and discussion. Results of recoveries made from the 3 groups of recipients are shown in table 2 and they show remarkable variations. Most of the larvae were expelled from recipient group A mice which received cells from singly sensitized donors. Here comparatively more larvae (62.5%) were expelled during the 1st 4 h after challenge as compared to 60.6% expelled from group B recipients. Thereafter the expulsion rate in group A mice proceded rapidly and, at 36 h after challenge, the percentage of larvae expelled in both groups A and B was about the same, 97.8% in group A and 97.6% in group B mice. Control recipients with cells from normal non-infected donors gave baseline readings of larvae expelled as 5.4% at 4 h and 40.8% at 36 h after challenge.

Table 2. Percentage of *A. caninum* larvae recovered from experimental and control groups of recipient mice at 4-h intervals during 36 h after a challenge dose of 500 larvae

Duration of infection at necropsy (h)	A Recipients with singly sensitized cells	B Recipients with repeatedly sensitized cells	C Recipients with nonsensitized cells
4	37.5	39.4	94.6
8	23.8	26.8	86.2
12	20.3	25.6	81.6
16	17.2	21.8	74.2
20	10.9	12.8	66.2
24	8.9	6.0	61.6
36	2.2	2.4	59.2

Readings are based on mean of recoveries made from 3 animals.

It is clear from the results that transferred sensitized (immune) peritoneal exudate cells from singly infected isologous donors produced rapid expulsion as compared to repeatedly immunized and non-immunized cells. However, at 36 h after challenge, expulsion was almost identical in the 2 experimental groups with an almost equal immune response. From 24 to 36 h, group A expelled more larvae (6.7%) in comparison with group B (3.6%), probably due to the presence of increased histamine in the intestine of former on the 1st day after infection (Vardhani and Johri[13]). The entire worm load within the alimentary tract was expelled within 24 h in both groups A and B. Lung migration did not take place and larvae migrated into the muscles within 4 h after challenge in group A mice, whereas this did not occur in groups B and C mice. Comparatively less larvae in the gastrointestinal tract suggests the induction of strong immunity due to rapid homing and dissemination of sensitized cells into the lumen of crypt at a faster rate in group A recipients where more larvae resorted to migration to muscles. Thus, the sensitized bowel became untenable for the larvae resulting in their allergic immobilization or death and eventual expulsion. Coupled with this, local cellular injuries result in the production of histamine which also aids in expulsion. These results confirm those of Murray et al.[14,15] who also found vasoactive amines during expulsion of *N. brasiliensis* from infected rats. Allergic inflammations, fragmentation of the intestinal villi and alterations in the biochemical environment also act as intolerable factors. Though muscles are a favourable and suitable site, the migrating larvae perish due to diffused infiltration of inflammatory cells which also sensitize and partly destroy muscle fibres. Lee et al.[16] also reported migration of *A. caninum* larvae into the muscles within 4 h and the infiltration of inflammatory cells in infected mice. Larsh[17] found that larvae that did not enter the lungs during migration perish readily, and this may account for the rapid expulsion of larvae from recipients of group A.

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The lectin from *Viscum album* L. purification by biospecific affinity chromatography

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Summary. A lectin from *Viscum album* which specifically binds to D-galactose was isolated by affinity chromatography on O-lactosyl-, O-galactosyl-polycarylamide or hydrolized sepharose 4 B. Some serological and physicochemical properties of the agglutinin are reported.

Of the lectins described in the literature showing anti-D-galactose specificity, those from *Ricinus communis*, *Momordia charantia* and *Abrus precatorius* have been isolated by biospecific affinity chromatography on agarose gel beads[1]. But those from *Bauhinia purpurea alba*, *Crotalaria juncea*, *Sophora japonica* and *Wistaria floribunda* do not react with agarose[2,3]. However these lectins react with a galactan gel prepared by acid treatment of agarose gel beads as described by Ersson et al.[2]. The lectin from *Viscum album* shows similar properties. Recently Franz et al. reported on the isolation of a lectin- and toxin-fraction from *Viscum album* by affinity chromatography on insolubilized serum proteins and subsequent fractionation by gel chromatography using sephadex G_{75}[4]. In this paper we describe a method to isolate and purify the lectin by affinity chromatography on