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AN OUTBREAK OF *SALMONELLA TYPHIMURIUM* INFECTION IN A HERD OF CALVES

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In the summer of 1970, a disease in which most of calves suffered from diarrhea occurred in a herd of the animals in Hokkaido. An epizootiological study has been carried out. The results are as follows:

1) On a postmortem examination, septicemia was observed. *Salmonella typhimurium* was isolated from the visceral organs and intestinal contents. A total of 149 Salmonella cultures were isolated from 4,831 samples including rectal swabs of the diseased or normal animals and various environmental materials obtained on this farm during the period from August, 1970 to October, 1971. Of the 149 cultures, 144 were *S. typhimurium*, 3 *S. enteritidis*, and the remainders *S. johannesburg*.

2) According to the difference of sensitivity to streptomycin and sulfadimethoxin, the *S. typhimurium* strains were divided into three patterns. Among the 44 strains of *S. typhimurium* applied to phage typing, 24 (54.5%) belonged to type Ia, 7 (15.9%) to type Ia var. 1. Moreover, 1 strain (2.3%) was untypable, and 12 (27.2%) not sensitive to all the phages used. By means of the fermentation tests, 77 strains of *S. typhimurium* were divided into two biotypes of 1 (18 strains) and 10 (59 strains).

3) Because of the multiplicity of phage types and drug sensitivity patterns, and of the uniform biotype (type 10) of *S. typhimurium*, the initial source of the infection could not be determined on this farm. However, in early 1971 a second outbreak of the infection was observed in 2 new animal houses of the farm and *S. typhimurium* isolates belonged to only biotype 1. No Salmonella was isolated from 110 samples of calf milk replacer. These facts suggest that the organism was newly introduced into the farm from some outside source.

4) In 1970, *S. enteritidis* was isolated from a calf on the next day of its arrival at the farm, and, in 1971, *S. johannesburg* was obtained from a calf on arrival. Thus, it was considered that also *S. typhimurium* might be introduced into the farm by carrier calves, although the single rectal swab culture could not detect the carriers.

5) Two of the 65 serum samples showed O-agglutination titers of 1:80 and 1:40 respectively and others were 1:20 or less. The H-agglutination titer

was lower than the O-agglutination titer. No correlation was observed between the state of the carrier and the titers.

6) It was effective in the control of the disease to keep newly introduced calves separately in small groups.

POSSIBILITY OF REVERSION IN AN INFECTIOUS CANINE HEPATITIS VIRUS-INDUCED HAMSTER TUMOR CELL LINE

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It has recently been reported that the properties of tumor cells are not irreversibly fixed but changeable. RABINOWITZ & SACHS reported that they isolated the variants which have a reduced tumorigenicity by seeding polyoma virus-transformants on the fixed cell layers. SIRAGI et al. isolated the non-tumorigenic variants from a mouse melanoma cell line by culturing the cells in a medium containing non-growth inhibiting concentrations of 5-bromodeoxyuridine (BUdR). In the case of adenovirus-transformants or adenovirus-induced tumor cell lines, however, no such report has been presented. Attempts were made by the author to determine whether reversion occurs in an infectious canine hepatitis virus-induced tumor cell line (HT-7 cell). Prior to the experiments, the HT-7 cell line was cloned three times.

The monolayers of hamster embryo cells, mouse embryo cells, dog kidney cells, HeLa cells and HT-7 cells were fixed by 1% glutaraldehyde solution and HT-7 cells were seeded onto these fixed layers to give rise to cell colonies originating from single cells. The cloning efficiency was 0.7~15%, which was lower than that of polyoma virus-transformants. The total of 60 clones isolated showed as high a tumorigenicity as the parental cells. The HT-7 cells grown in the medium containing 1 to 5 $\mu\text{g}/\text{ml}$ of BUdR and 5-iododeoxyuridine at $41\pm 0.5^\circ\text{C}$, and in the presence of a conditioned medium of normal cells, were also shown to be highly tumorigenic. A clone (Clb) obtained in a soft agar medium and showing a rather epithelioid shape also produced tumors in hamsters, but the number of days required for the forming of tumors, with the inoculum of 10^5 cells, was about 10 days longer than in the case of the parent cell. Subclones of Clb showed tumorigenicity similar to either Clb or the parent cell, except one which formed a relatively slow-growing tumor. The slow-growing