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Brief Communication

RELATIONSHIPS AMONG HEMOGLOBIN, RELATIVE LIVER WEIGHT AND PLASMA ALAT-ACTIVITY IN ALEUTIAN-POSITIVE MINK

Aleutian disease (AD) of mink is an extensively studied virus-induced lymphoproliferative disorder involving extreme plasmacytosis. The affected animals develop anemia which within a few months after infection may become severe (*McGuire et al.* 1979). Characteristically in AD the liver is somewhat enlarged (*Eklund et al.* 1968) and the activity of certain plasma enzymes, for example alanine aminotransferase (ALAT, EC 2.6.1.2) is increased. The present study was designed to study the mathematical relationship between the hemoglobin values (Hb) and the relative liver weight, between the Hb and plasma ALAT-activity and between the relative liver weight and plasma ALAT-activity in apparently healthy minks. As it turned out, all the animals sampled were found to react positively for AD by counterimmunoelectrophoresis.

The blood samples were taken in connection with pelting from 54 apparently healthy male standard minks, using cardiac puncture with a heparinized syringe under ether anaesthesia. The animals were weighed prior to the blood sampling and sacrificed by cervical dislocation immediately after sampling. The minks were then pelted and their livers removed and weighed. All the animals were about 6 months of age and had been kept on the same farm, housed in cages of 2 (♀ & ♂); they had been fed with commercial moist ready-mixed mink feed once a day, with water freely available all the time.

The Hb-concentrations were determined directly as oxyhemoglobin by the Spencer Hb-meter (American Optical Co., Buffalo, USA).

The plasma was separated and the ALAT-activities determined by using a Gilford System 3500 Analyzer (Gilford Instrument Company, Ohio, USA) according to the standard methods of the *Committee on Enzymes of the Scandinavian Society for Clinical Chemistry and Clinical Physiology* (1974).

The samples were checked for AD by counterimmunoelectrophoresis (*Cho & Ingram* 1972).

The correlation coefficient (r) between the ALAT-values and the Hb-concentrations, between the ALAT-activities and the relative liver weights expressed in terms of per cent of total body weight, and between the Hb-concentrations and the relative liver weights were determined by linear regression. The statistical significance of the deviation of the correlation coefficient from zero was determined by t-statistics evaluation.

All the samples were found to be positive for AD. The mean Hb-concentration was 18.1 ± 2.1 g/100 ml (mean ± s), the mean ALAT-activity 260 ± 272 IU/l and the mean relative liver weight 2.5 ± 0.5 %. Fig. 1 shows the ALAT-activity plotted against the Hb-concentration, the regression line and its equation fitted to the data points. The correlation coefficient and its significance is also given.

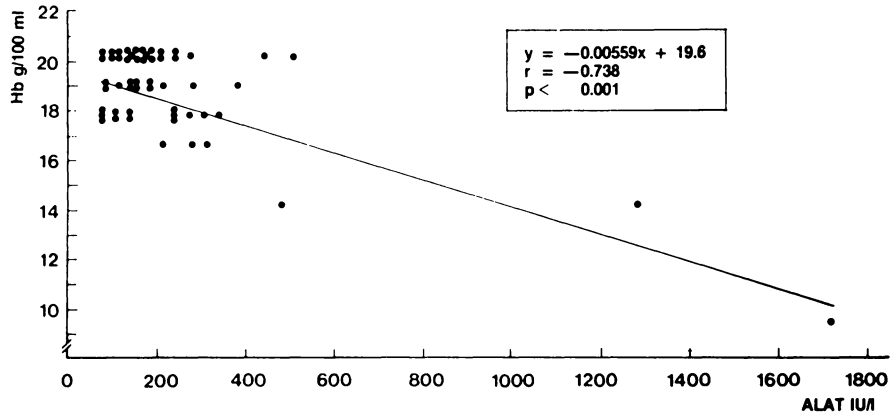

Figure 1. The relationship between the ALAT-activities and the Hb-concentrations in minks positive for Aleutian disease by counterimmunoelectrophoresis.

Fig. 2 correspondingly shows the relative liver weight plotted against the Hb-concentration. The correlation coefficient between the relative liver weights and the ALAT-activities was found to be 0.540 ($P < 0.001$).

The work of *Jepsen et al.* (1981) has shown that ether anaesthesia during blood sampling in mink does not affect the Hb-concentration or the ALAT-activity of the sample. The significant correlations among the 3 parameters might be due to effects of a common causal determinant, in this case possibly

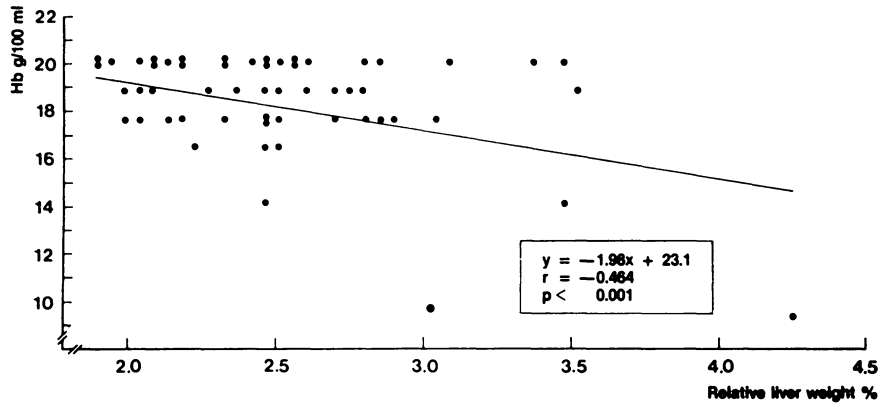

Figure 2. The relationship between the relative liver weights and Hb-concentrations in minks positive for Aleutian disease by counter-immunoelectrophoresis.

AD. The conclusion of the present study is that whenever studies are conducted on mink with reference to Hb-values, plasma ALAT-activity or the relative liver weights of the animals, AD-status is a factor to be taken into consideration.

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