

GENETIC OF CATTLE RESISTANCE TO LEUCOSIS

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SUMMARY

Genetics of cattle resistance to BLV infection and leucosis was studied. It was established that the coefficient of heritability (h^2) of resistance to leucosis and BLV infection was 0.39 and 0.50, respectively. The differences in disease frequency to BLV infection and leucosis among lines, families, progeny of bulls were determined. The concordancy of leucosis in unisexual twins constituted 74.1%. A positive correlation does not exist between resistance of mothers and daughters to BLV infection. The correlation between resistance to BLV infection and leucosis was absent.

INTRODUCTION

The cattle leucosis is widely spread in West Siberia and the tendency of disease increase is observed. So, in 1989 in Novosibirsk region 26.6% of BLV infected cows from 136 thousand cattle were revealed and 7.7% of leucosis sick animals were found. The BLV infection in separate regions varied from 1.2 to 52.9% and to 74.4% in some farms. The frequency of cow leucosis in some parts of the region varied from 0.9 to 19.5%. The population mortality increased 3.3 times as much in Novosibirsk region for ten years from 1981 to 1991.

MATERIALS AND METHODS

The BLV infection and leucosis diseases were investigated in 18411 cows of Black and White cattle and in 5593 mother-daughter pairs on 10 breeding farms. Diagnosis of leucosis was made using AGID, clinical, hematologic and histologic methods.

RESULTS

The leucosis frequency in daughters born from sick mothers was 2.8 times higher, than from healthy ones (table). The morbidity of daughters born from different bulls varied from 0 to 29.0%. The large differences between the disease frequency of the animals born from different families was revealed (0.0 - 50.0%). The heritability coefficient of resistance to leucosis (h^2) was 0.39. It was established, that the concordancy of twins on leucosis was $74.1 \pm 8.4\%$. The influence of lines on the leucosis morbidity of animals was found. The frequency of BLV infection daughters from infected mothers was 38.5% and from healthy mothers was 16.3% ($P < 0.001$). The correlation coefficient between the frequency of BLV infection mothers and daughters was 0.25. The differences on the frequency of BLV infection between lines (16.8-40.6%), families (7.7 - 44.4%), progeny of the individual bulls (8.0 - 61.1%) were found.

Table 1. The frequency of leucosis mothers and daughters diseases

Mothers	Total	Daughters			
		healthy	%	sick	%
Healthy	4438	3991	89.9	447	10.1
Sick	830	595	71.7	235	28.3
Total	5268	4586	87.0	682	13.0

DISCUSSION

The genetic determination of resistance to leucosis and BLV infection for the frequency of disease in lines, families, progeny of bulls, a positive correlation between mothers and daughters, and also a high concordancy of leucosis was confirmed by reliable differences. The connection between frequency of BLV infection and leucosis in mother-daughter pairs in individual farms was absent. A hypothesis was proposed that the resistance to BLV infection and leucosis was determined by different genetic systems. The system of complex bull analysis on the resistance to BLV infection and leucosis was suggested.

REFERENCES

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