NON-SPECIFIC CYTOTOXICITY OF RAINBOW TROUT LYMPHOCYTES AGAINST VIRUS-INFECTED TARGET CELLS

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Non-specific cellular cytotoxicity has been documented and well characterized in mammals and birds. In fish, lymphocytes showing natural killer-like activity have also been reported. To elucidate the role of the natural cytotoxic lymphocytes in the host defense machanisms against virus infection, the author investigated the occurrence of cytotoxic activity in normal rainbow trout and in trout inoculated with infectious pancreatic necrosis virus (IPNV) and *Oncorhynchus masou* virus (OMV) against established teleost cell lines by using the ^{51}Cr release assay. Non-specific cytotoxic activity of normal lymphocytes was dependent on the effector-target cells ratio, and maximum release of ^{51}Cr occurred at 15°C during 12 to 18 hours of incubation. The activity of lymphocytes varied considerably with fish and organs.

Compared to non-infected target cells, target cells infected with IPNV were more susceptible to normal lymphocytes.

Cytotoxic activity of lymphocytes from rainbow trout inoculated with IPNV or OMV was higher than that of lymphocytes from normal rainbow trout. The cytotoxic activity increased transiently within several days after the virus inoculation. The enhanced activity of the lymphocytes was not due to virus-specific reactions, since the lymphocytes showed increased activity against not only the target cells infected with homologous virus but also against heterologous virus and normal cells. The cytotoxic activity of lymphocytes was suppressed one week after the virus inoculation. The suppression of the activity was not observed in the OMV-inoculated fish, indicating that they possessed immunosuppression associated with IPNV infection.

The addition of normal rainbow trout serum in the culture resulted in the suppression of cytotoxic activity of lymphocytes, but that of fetal calf serum or rainbow trout serum from virus-inoculated fish had no effect.

From the results of the present investigation, it was postulated that the non-specific cytotoxic activity of lymphocytes of rainbow trout is related, at least partially, to host defense mechanisms against virus infection.