MEASURING THE NATURAL KILLER CELL ACTIVITY ON CANDIDA SPECIES

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Until recently, natural cellular resistance against bacterial, mycotic and parasitic infections has been attributed to the polymorphonuclear leucocyte and the monocyte / macrophage system on the host. The Natural Killer (NK) cell system is now emerging as potential third means of innate cellular resistance against these groups of organisms. It has furthermore been fairly well established that NK cells play a role in first line of defenses against neoplastic cells (1) and against certain virus-infected cells (2); however, relatively little work has been done looking specifically at the effects of NK cells on other microbial infectious agents. Anti-bacterial activity of the NK cell is also shown clearly (3). More recently, cumulative publications indicated that NK cell is active on fungi such as Candida in different forms by using Cr^{51} releasing method (4).

To establish a simpler and more reliable test for measuring the NK activity compared to those used in conventional microcytotoxicity tests, we used Candida stellatoidea as the target cell. In this method, we mixed monocyte free Ficoll-Isopaque purified human peripheral blood lymphocytes and Candida species in the test tubes incubated for two hours at 37°C and than prepared pour plates to obtain colonies from the yeast. According to the killing potency of the lymphocytes, colonies were reduced in numbers and "Anti-Candidial Index" (ACI) were calculated. ACI's were greatly dependent on target/effected cell ratio. By using add-back experiments, there has been no monocyte effect detected. Furthermore anticandidial indexes revealed no differences related to their species variations or due to their pathogenicity. When monoclonal antibodies (Leu-IIb and Leu-MI) and fresh rabbit complement were mixed with the purified lymphocytes, Leu, IIb (anti-NK Fc receptor antibody) showed strong inhibition on ACI. These results indicate that this method is quick, does not need sophisticated equipment. It is inexpensive and provides results in a shorter period of time. It can therefore be used in any microbiology-immunology laboratory.

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