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CHANGES IN HAEMOCYTE COUNTS IN LARVAE OF
SPODOPTERA MAURITIA (BOISDUVAL) INFECTED WITH
A NUCLEAR POLYHEDROSIS VIRUS*

The number of circulating haemocytes in insects varies greatly depending on the quantity of available blood, sex, stage of development and other physiological factors. Variations in total haemocyte counts (THC) have been reported to occur in insects infected with microorganisms (Beard, 1945; Jacob, 1972; Shapiro, 1967; Shapiro *et. al.*, 1969). The present paper reports observations made on the effect of a nuclear polyhedrosis infection on the THC in larvae of *Spodoptera mauritia* (Boisduval).

Early fourth instar larvae reared in the laboratory on the common grass *Ischeamum aristatum* H., were used in these studies. The larvae were infected by feeding them for 24 hours on tender grass leaves smeared with a purified suspension of polyhedra containing 5×10^8 polyhedra/ml. The larvae were then transferred to fresh foliage and reared individually. Larvae treated similarly but without the virus inoculum served as control. The larvae were reared at 29 to 30°C and 89 to 93 per cent relative humidity.

Haemocyte counts were made at 24, 48, 72 and 96 hours, after inoculation, using 10 larvae each from treated and control groups. For these studies the larvae were immersed in hot water at 55 to 60°C for 2 to 3 minutes to prevent haemocyte clumping. Blood was withdrawn into a Thoma white cell pipette by cutting a proleg on the sixth abdominal segment. The drawn haemolymph was diluted 20 times with 2 per cent Versene saline containing a trace of gentian violet. The pipette was shaken for several minutes and the first few drops discarded. The haemocytes were counted with a haemocytometer (improved double Neubauer ruling) at a magnification of 450 X. The data on the THC were expressed as cells/microlitre. The statistical 't' analysis was applied for comparing differences between means.

Results presented in Table 1 reveal that there was no significant difference between the healthy and virus infected larvae in the average number of circulating haemocytes at 24 hours after infection. At all subsequent intervals however, the diseased larvae had significantly lower number of haemocytes than the normal ones. In the NPV infected larvae of *S. litura* however, Jacob (1972)

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Table 1

Average number of circulating haemocytes in healthy and NPV infected larvae of *S. mauritia*

Post-inoculation period in hours	Average number of circulating haemocytes/ 1 ± s. E.			% increase or decrease over healthy
	Healthy	Diseased		
24	47524 ± 857.25	44412 ± 1314.19		- 6.54
48	48886 ± 541.09	29560 ± 1076.44		-39.55
72	54456 ± 539.86	25216 ± 568.32		-53.69
96	64160 ± 776.27	19470 ± 527.81		-69.81

had observed an increase in THC in 24 hours following inoculation. The healthy larvae of *S. mauritia* showed an increase in THC with age while the diseased ones showed appreciably reduced counts. Jacob (1972) also made a similar observation in *S. litura*. The destruction of haemocytes and the adverse effect of virus infection on the mitotic division of haemocytes may account for the reduction in THC of the diseased larvae.

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സംഗ്രഹം

ന്യൂറോഡോപ്പ് റെൻ മൊറിഷ്യ ബോയിസ് എന്ന നിശാശലഭത്തിന്റെ പൂഴക്കളെ ന്യൂക്ലിയൻ പോളിഫിഡ്രോസിസ് വൈറസ് രോഗം ബാധിച്ചാൽ അവകളുടെ രക്താണുക്കളെ എങ്ങനെ ബാധിക്കുമെന്നു നടത്തിയ പഠനത്തിൽ നിന്നു തെളിഞ്ഞതു് 24 മണിക്കൂറുകൾക്കുള്ളിൽ രക്താണുക്കളുടെ എണ്ണത്തിൽ കാര്യമായ വ്യത്യാസം ഒന്നും ഇല്ല എന്നാണ്. എന്നാൽ 24 മണിക്കൂറുകൾക്കു ശേഷം രോഗബാധയില്ലാത്ത പൂഴക്കളിൽ രക്താണുക്കളുടെ എണ്ണം ദിവസേന വർദ്ധിച്ചുകൊണ്ടിരിക്കെ രോഗബാധയേറ്റ പൂഴക്കളിൽ രക്താണുക്കളുടെ എണ്ണം ഗണ്യമായി കുറഞ്ഞു വന്നു. തൊണ്ണൂറോളം TDI/Q<e>gT(3?i രോഗം ബാധിക്കാത്ത പൂഴക്കളെ അപേക്ഷിച്ച് രോഗം ബാധിച്ചവയിൽ രക്താണുക്കളുടെ എണ്ണം 09.81 ശതമാനമായി കുറഞ്ഞു.

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