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Research Paper

ESTERASE α, β - THE BIOCHEMICAL MARKERS FOR QUANTITATIVE AND QUALITATIVE TRAITS OF SILKWORM, *BOMBYX MORI* L.

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ABSTRACT

M.Con.1, M.Con.4 and M.Con.5 are multivoltine (V_3) congenic breeds developed through introgression of high cocoon shell weight (SCW) character from bivoltine syngenic line into high survival multivoltine syngenic line. Similarly, high survival character from multivoltine was introgressed in bivoltine to develop bivoltine congenic breeds *viz.*, B.Con.1, B.Con.4 and B.Con.5. Syngenic lines developed based on isozyme possessor have different anodic native protein molecular masses for amylase, esterase, acid phosphatase and malate dehydrogenase in haemolymph at pH 7.0 and 8.5. Only esterase isozyme pattern depicted that 232 and 223 kDa native proteins, the possessor of β-specific esterase from donor multivoltine breeds introgressed to respective congenic bivoltine breeds B.Con.1, B.Con.4 and B. Con.5 at respective pH 7.0 and 8.5. These breeds possess survival rate equal to that of the donor even during highly variable and unfavourable climate during April to September. It indicates that thermo-tolerant β-specific esterase is one of the markers associated with high survival. Similarly, 185 and 180 kDa native protein molecular masses, the possessor of α-specific esterase from donor bivoltine breeds introgressed to multivoltine congenic breeds M.Con.1, M.Con.4 and M.Con.5 at respective pH 7.0 and 8.5 causing gradual transgression of cocoon shell weight, was considered as biochemical marker for high shell weight. Transgression of target trait took place gradually after successive development of recurrent back cross lines RBL1, RBL2 and RBL3 for both the traits. The other two native protein masses, 176 & 141 kDa at pH 7.0 and 164 & 137 kDa at pH 8.5- the possessor of non specific α β-esterase are common in all multivoltine or bivoltine silkworm strains. Isozyme possessor native proteins of esterase in haemolymph of different breeds are discussed.

Key words: Bivoltine (V_2), congenic breed, esterase, introgression, multivoltine (V_3), recurrent back cross lines, syngenic line.