



Influence of Various Concentrations of Acetone Solution of Retinol on Pattern of Chitin Deposition in the Integument of Fifth Instar Larvae of Silkworm, *Bombyx Mori* (L) (Pm X Csr2)

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ABSTRACT

Various concentrations of 10 mL acetone solution of retinol and fernalol methyl ether (FME) were used for topical application to individual larval instars of silkworm, *Bombyx mori* (L) (Race: PM x CSR2) at 48 h after the fourth moult. The integument chitin of untreated control larvae; acetone treated control; FME treated larvae and retinol treated larvae was estimated at 120 h after the fourth moult. Topical application of various concentrations of acetone solutions of FME and retinol to fifth instar larvae of silkworm, *Bombyx mori* (L) was found reflected into the reduction in the deposition of chitin in the larval body wall. The reduction in body wall chitin was found ranging from zero to hundred percent. The plot of concentrations of acetone solutions (FME and retinol) and percent reduction in the body wall chitin was found exhibiting a characteristic sigmoid form of displacement, which herewith titled as “Punyamayee Baramati Dose Response Curve”. Since the effects of juvenoids involve the inhibition of metamorphosis of insects through reduction in chitin deposition, it is possible to express the concentration (dose) applied in terms of ID50 value. The ID50 value of juvenoid contents of FME and Retinol can be defined as the specific unit (mg mL^{-1}), which enable to chitin to deposit fifty percent less in the body wall of larvae (In comparison with untreated control). Accordingly, the ID50 value calculated from the “Punyamayee Baramati Dose Response Curves” for FME was found measured 0.08 mg mL^{-1} . The ID50 value for Retinol was measured 0.095 mg mL^{-1} . Acetone soluble juvenoid content of Retinol, the diterpene compounds may be utilized efficiently for the fortified development of fifth instars of silkworm, *Bombyx mori* (L) and thereby, the cocoon quality. Sigmoid (S-form) “Baramati Dose Response Curve” may help for quantitative estimation of juvenoid contents of various terpene compounds and terpenoids.

Keywords: FME; Diterpene; Retinol, ID50 value; Chitin, juvenoids.
