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Effect of two photo activated insecticides Intransglutaminase – mediated cell death on *Spodoptera furgipedra* Sf9 cell line *in vitro*

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Abstract: The *Spodoptera furgipedra* Sf9 cell line was tested with both Hematoporphyrin IX and B-Phenylpyruvic acid at LC_{50} 0.15 mM/ml and 0.35 mM/ml concentrations respectively. After irradiation of the tested cells, the photodynamic effect was measured with MTT assay. The results indicated that the B-phenylpyruvic acid and Hematoporphyrin IX were found to be effective as photo insecticides. In this cytochemical study we had tested the *Spodoptera furgipedra* Sf9 cell line after treatment with the previous photo insecticide for cytochemical evidence for transglutamase activity. The cells were treated in slide 8 well plat with gasket(8×10^4cells/well) after exposure to UV (380-400W/M^2) M^2 artificial lights) then we added the 0.5mM fluorescein cadaverine for 45min at $37C^O$, then fixed at $-20C^O$ in methanol. The slides were gently washed in PBS to remove any unincorporated fluorescein cadaverine. Remove wells gasket the cells were viewed under the fluorescent microscope (Zeiss Axioskop) for transglutaminase activity after adding mounting medium. The cytochemical results showed the activity of TGase enzyme due to the photodynamic effect of both B-phenylpyruvic acid and Hematoporphyrin IX. So we can conclude that these photosynthtizer were more effective to be used as a photo insecticide against *S. furgipedra*. The effect was not only due to singlet oxygen but also due transglutaminase mediated cell death on the treated cells which lead to apoptosis.. However the effect of B-phenylpyruvic acid was accompanied with losing of the cell integrity. This promising results have demonstrated great potentials to translate the morphological apoitosis to biochemical effect which is more precise in demonstration for applications in histopathological techniques to death diagnosis.

Keywords:Cytochemical, transglutamase, Hematoporphyrin IX, B-Phenylpyruvic acid, *Spodoptera furgipedra.*

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