Experimental Studies On Antimicrobial Peptides

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Discussion:

D.melanogaster is a suitable biosystem to detect *in vivo* genotoxicity of various agents and wing rest is a qualitative method to determine the mutagenic effect as well. The acute toxic effects of CAMPs on *D.melanogaster* were investigated for detecting the genotoxic potential of peptides. *D.melanogaster* is used for testing the mutagenic effect of drugs, both for mutagencity [3] and genotoxicity [13]. The wing test is an easy method to detect the *in vivo* genotoxicity. In this context, it must be remembered that the quantification of the recombinagenic activity of a compound is of primary importance for genotoxicity screening [14]. *Drosophila* is considered as a good model system, since over 60% of human disease genes have fly homologues, indicating that the fly response to physiological insults is comparable to humans [15]. This would reinforce the usefulness of the *Drosophila* model as a first tier *in vivo* test for drug toxicity.

The present study indicated that CAMPs (VSL2) did not induce any amount of damage to the DNA at the given concentrations. Canton flies (both males and females) were exposed to varying concentrations of VSL2 and analyzed for phenotypic changes and the quality of the DNA obtained from the exposed flies was checked. Canton strains exposed to different concentrations of VSL2 & CHX did not cause any phenotypic changes, when compared to the positive controls. Abnormalities such as discoloration of thorax, elongation of abdomen and curling of abdomen were not observed in CAMPs treated samples at 24 hours as well as 48 hours of exposurewhen analyzed under the stereo zoom microscope. Fragmentation assay of DNA obtained from flies exposed to VSL2, CHX (10,50 &100μM) for 24 hours showed mild shearing at higher concentrations. Significant fragments of DNA were observed in the positive control (benzaldehyde) lane at 150bp.

Wing spot assay is an appropriate tool to study cellular events, including mutagenesis, [16] somatic mutation. and recombination effects.. Through the use of the mwh and the flare markers, point mutations induced in the mwh+ gene [17,18] can be evaluated. The number and size of the mwh clones and a significant number of Single flr or mwh spots (both small and large clones) would allow a quantitative evaluation of the effectiveness of the environmental or genetic “treatments” to induce the loss of the mwh+Y chromosome [12]. Based on the earlier reports, the mwh and flare system is an adequate tool to detect *in vivo,* the effects of environmentally and genetically induced chromosome loss in higher eukaryotic organisms. Hence, it was used in the present study to ascertain the genotoxicity of CAMPs.

Conclusion:

The *in vivo* genotoxicity and mutagencity of the peptides (VSL2) were assessed using *D.melanogaster models.* The results confirmed that the peptide was not mutagenic and genotoxic *in vivo*.

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