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Therapeutics from insects

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Many have been published on therapeutic derivatives from living organisms including insects. More than 900 therapeutic products were isolated from insects. Most people think in insects as enemies but my thought is that insects are our friends not our enemies as those see. Many beneficial insects other than honey bees, silk worms and shellac insect can be seen. Insects could be our MicroFactories, Biosensors or Bioreactors. InsectFarm is an amazing example of the applied research that transfers the insects from laboratory to market. Prof Dr Mircea Ciuhrii (The founder of InsecFarm) is Italian Entomologist who worked for 18 years to derive therapeutics from insects. He derived more than 30 commercial medicines from insects (Imunomax, Noblesse, etc.). Many approaches were followed in this respect. Many laboratories took the biochemical approach to purify components of the innate immune system of insects and insect metabolites to be used in many therapeutic purposes. Others took the molecular proteomic approach to sequence and/ or synthesize components of the innate immune system of insects and to use these components in medicine. The Approach of Our Laboratory is different somehow. We used different routes of administration to induce the insect immune system, then a transcriptomic study was done to discover the induced genes and to identify specific biomarkers that can help in drug discovery. Biomarkers play an important role in medicine and in drug discovery and development as well. Optimum biomarker development and application will require a team approach because of the multifaceted nature of biomarker selection, validation, and application. This team use techniques such as pharmacoepidemiology, pharmacogenetics, pharmacogenomics, and functional proteomics; bioanalytical development and validation; disease process and therapeutic intervention assessments; and pharmacokinetic/ pharmacodynamic modeling and simulation to improve and refine drug development. The team approach will minimize the effect of such component on the rest of the process. Our Achievements included the discovery of three components of the innate immune system of the cotton leafworm, *Spodoptera littoralis*. These components were designated as *Spli*Def (defesin), *Spli*Lec (lectin) and *Spli*Cec (cecropin). *Spli*Def and *Spli*Lec were confirmed as antimicrobial peptides, while *Spli*Cec was additionally confirmed as anticancer peptide. Our current research is going on to achieve something in antioxidants and anticoagulants from insects. Our perspective is to achieve something in the mass production of prototypes of our products and to reach it to the commercial level. These achievements are the integrated contributions of everybody in my team staff.

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