A Novel Iso-Enzyme Based Dot Blot Strip Test for Rapid Detection of Multiple Insecticide Residues

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In many parts of the world including India, several hazardous chemical insecticides are excessively sprayed on vegetables,fruits or any other consumable product for insect control. In general, cheaper insecticides belonging to three major groups (organophosphates, carbamates and synthetic pyrethroids) are most commonly used by farmers . These insecticide residues at low concentrations in food or water are directly harmful to humans and ecosystems. There is no quick method available to detect the presence of any of these insecticides. We developed a simple, sensitive and reliable 30-min test to precisely detect insecticide residues belonging to specific groups on a single strip , based on the principle that specific carboxylesterase iso-enzymes derived from 'insecticide resistant insects' inhibit specific insecticides and the extent of inhibition, directly indicates the quantity of insecticide. The iso-enzymes are immobilized on nitrocellulose membranes to retain activity for at least one month under normal storage in paper packets at room temperature. The kit can be used to identify the presence of specific insecticides apart from detecting whether the amount of insecticide is above the maximum tolerance limits set by the WHO (World Health Organisation).

Awards Won:

Second Award of $2,000