

STANDARDIZATION OF METHOD FOR QUANTIFICATION OF NEO-NICOTINOIDS IN FOOD SAMPLE USING HPLC

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Chemicals have been used to manage insect pests for many decades. Insecticide resistance is a major driving force behind the need for development of new insecticides. The perfect insecticide should have the characteristics such as efficacy, economic viability and safety. Nicotinoids represent a unique model for new generation of synthetic nicotinoids, which would act as poison for a neurotransmitter receptor. Neonicotinoids represents a class of compounds with a unique mode of action due to its interactions with acetylcholine (Ach) receptors. The first neonicotinoid insecticide introduced to the market was imidacloprid in 1991. The present investigation was done to standardize a method for the simultaneous quantification of some of neonicotinoids namely acetamiprid, thiacloprid and imidacloprid and to use the method developed to examine these neonicotinoids in the food sample. The investigation was successful as these pesticides got separated at HPLC conditions with detection at 254 nm, flow rate of 1.0 ml/min, imidacloprid and acetamiprid were detected in cabbage sample. The above investigation was carried out to standardize HPLC condition to simultaneously detect some of the neonicotinoids namely acetamiprid, thiacloprid and imidacloprid. Imidacloprid was the first to come out of the column i.e. it has a minimum retention time in the column followed by acetamiprid and the thiacloprid with a retention time of 4.70 min, 5.62 min, and 7.93 min respectively. Thus, in the samples, a retention time closer to the standard was taken for calculations. In cabbage sample, imidacloprid and acetamiprid were detected, with a retention time of 4.71 min and 5.68 min respectively. The difference between the retention time of standard and sample may be because of manual error in pressing the run button (integrator) and HPLC noise. There are number of factors which may contribute to this difference as mentioned below: there may be degraded metabolites of neonicotinoids, which are interfering in the detection; the food mix is made up of complex system consisting of protein, carbohydrate, fat, vitamins and minerals.

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