

**FORECASTING OF THE HAZARD OF EMAMECTINE BENZOATE
INSECTICIDE ON HUMAN HEALTH IN THE CONSUMPTION OF
FRUITS GROWN WITH THE APPLICATION OF FORMULATIONS
BASED ON IT**

**ПРОГНОЗУВАННЯ НЕБЕЗПЕКИ ІНСЕКТИЦИДУ ЕМАМЕКТИНУ
БЕНЗОАТУ НА ЗДОРОВ'Я ЛЮДИНИ ПРИ СПОЖИВАННІ ФРУКТІВ,
ВИРОЩЕНИХ ПРИ ЗАСТОСУВАННІ ПРЕПАРАТІВ НА ЙОГО
ОСНОВІ**

Antonenko A.M., Vavrinevych O.P., Shpak B.I., Omelchuk S.T. /

АНТОНЕНКО А.М., ВАВРІНЕВИЧ О.П., ШПАК Б.І., ОМЕЛЬЧУК С.Т.

Bogomolets National Medical University

Hygiene and Ecology Department # 1, Hygiene and Ecology Institute

Kyiv, Ukraine

Національний медичний університет імені О.О. Богомольця

Кафедра гігієни та екології № 1, Інститут гігієни та екології

м. Київ, Україна

It is known that it is practically impossible to obtain large yields from most fruit crops without protective measures. Research has shown that the pesticides application can potentially save from 1 ha of land up to 15 hundredweights of fruits. However, the presence of pesticide residues in food and raw materials can lead to health disorders.

The purpose – human hazard prediction in consumption of agricultural products contaminated with the insecticide emamectin benzoate.

Research materials and methods. The insecticide emamectin benzoate belonging to the class of aversectins was investigated. The parameters of its stability in grapes, peaches and cherries in soil and climatic conditions of Ukraine are given by the results of own field studies.

Specialists of the Hygiene and Ecology Institute recommended for the integral assessment of the potential hazard of pesticide effects on the human body

when consuming contaminated agricultural products, a four-grading scale, which in points evaluated the allowable daily dose (ADD), half-life period (τ_{50}) in plants and average daily product consumption.

After adding all the points, the integral index of pesticide-contaminated products the consumption was evaluated as follows: when its value is 3-5 points - substance is hazardous for humans (class 4), 6-8 – moderately hazardous (class 3), 9-11 – hazardous (class 2), 11-12 – extremely hazardous (class 1).

Results and discussion. According to stability in grapes, peaches, cherries emamectin benzoate is classified as hazard class 4 (not persistent).

For integral assessment of the potential hazard of exposure of the test compound to the human body when consuming contaminated agricultural products, on a four-grading scale we estimated allowable daily dose (0.001 mg/kg – 1 point), daily average consumption of grape, peach and cherry (200 + 70 + 70 + = 340 – 4 points) and average half-life period (τ_{50}) in these fruits (3.6 ± 0.2 days – 1 point). Thus, by the magnitude of the integral hazard index when consuming pesticide-contaminated products (6), emamectin benzoate belongs to the hazard class 3rd – moderately hazardous.

Conclusion. It is shown that by the value of integral hazard index when consuming pesticide-contaminated products emamectin benzoate belongs to the 3rd hazard class (moderately hazardous). The results obtained should be considered when addressing the issue of extending the scope of insecticide formulations based on the test compound.