

**The specificity of *Trichogramma pintoi* Voeg. (Hymenoptera, Trichogrammatidae) effect and productivity after native and modified nucleic acids use**

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The domestic and world experience shows that stable functioning of agroindustrial complex depends on successful phytosanitary problem-solving. It is determined by a high level of agricultural production wastes from hazardous organisms. Wide and not always scientifically based pesticides use often brings to the whole range of undesirable consequences. Except for environmental pollution, pesticides are the reason of the mass plant pollinators' entomophags death.

One way of the pesticides' use in planting capacity reducing is working out and introducing of the plant protection biological method. The development of biomethod is effective for solving the problem of preservation and rehabilitation of the human being and environment. Validating of the production means and methods, and use of entomophags are conducted in the scientific institutions of the various country regions.

The specimens of *Trichogramma* family – is the basic method of the biologic number control of many lepidopterous pests. They are represented exceptionally by the parasites of insect eggs. In biomethod practice trichogramma is used by mass breeding and issue into natural environment. Nevertheless, the parasite use is often unstable and varies in the wide range. A progress in trichogramma use is possible due to the laboratorial growing conditions rationalization and optimization. A long term trichogramma breeding on Angoumois grain moth eggs leads to parasites parameters deterioration – imago's lifetime, its motion activity and search capacity. There are number of new technical decisions concerning their growing on silkmoth eggs (Drozda, 1977;

1991). However, in any case, the researches concerning trichogramma productivity increasing are conducted with use of different compounds and methods of the directive effect.

We studied a possibility of e-DNA effect on the specimens' population of insects, important in agricultural sense to increase their productivity. We also studied a possibility of native and modified nucleic acids use in *Trichogramma pintoi Voeg* laboratorial growing regulations. Trichogramma was derived from the codling moth infested eggs exposed in the Kyiv region's apple-tree garden. In laboratorial conditions trichogramma was grown in the optimal hydrothermal regimens and photoperiod on *Sitotroga cerealella Oliv.* eggs. In researches we used native and alkylated by thiophosphamide or cyclophosphamide DNA (DNT and DNC correspondingly) in different concentrations. The water solutions of preparations were mixed with honey and fed up the imago parasite. In each research variant were 30 even-aged parasite females, and their age was within a few hours. These trichogramma females on 4 days completion were transplanted to the other test tubes with a new portion of eggs and feeding up. Such procedure was conducted until the females' natural death. Obtained results were estimated according to the accepted indexes. Distinctions probability in accordance with prolificacy index of females was determined by control (honey feeding up) with t-criterion use.

We studied a possible effect of spontaneous mutagenesis as a result of native and modified DNA effect on trichogramma populations. We also determined the mutagenesis phenomenon in a wide range of concentrations – from 0,0001 to 0,1%. It was analyzed 2510 parasite specimens. The visible mutations were found only in 0,71% of trichogramma population.

We also studied an influence of native and modified DNA in different concentrations on the trichogramma productivity main indexes. The results illustrated in the table. Evidently, the trichogramma's imago feeding up had a considerable effect on all the indexes. The population of parasites that was grown without feeding up (control-2) exhibits insignificant reproductive potential, vitality

and lifetime. Honey feeding up led to indexes increasing. Including in a diet DNA preparations in the range of 0,001-0,0001% essentially increased the parasites' females reproductive potential and other indexes. The particularities of trichogramma biology consist in the intensity reproduction realization in the first half of females' life with one typical peak. The specificity of preparations' effect in the 0,001-0,0001% concentrations, probably, is in clear forming of several reproduction peaks at the end of females' life that was one of the influence factors. In the optimal concentration regime, it was observed a statistically admissible increasing of females' prolificacy. Therefore, one of the significant indexes of DNA preparations' effects is that females' reproductive period duration was similar to their natural lifetime.

The researches testified that DNA preparations determine several trichogramma's effects types, in particular, participate in the directed metabolism regulation of imago females. The existence of the clear additional oviposition peaks testifies participation of the preparations in the forming processes and oocytes' ripening. The researches testified that established phenomenon of native and modified DNA stimulant effect may be used in biolaboratories for breeding the Trichogramma family entomophags specimens. As our researches testified, the last ones are the composite part of the integrated fruits and vegetables protection systems, and their realization facilitates the agrocenosis ecological situation improvement and environmental sanitation.

**Influence of the different native and modified DNA concentrations on trichogramma productivity**

Preparations	Concentration, %	Eggs, oviposited by one female,		% infesting females	Persistence, %	Imago's lifetime, days	
		Number of specimens	Td *			Max.	Min
DNA	0,1	32,9±7	- 0,8	72,1	70,3	8	4
	0,01	49,6±3	+1 ,7	20,2	84,4	10	6
	0,001	60,3±5	+5 ,2	91,8	89,7	12	8
	0,0001	59,7±4	+4 ,8	93,2	90,3	15	10
DNT	0,1	37,3±5	- 0,7	68,5	66,2	9	7
	0,01	57,8±4	+3 ,8	90,3	89,4	12	10
	0,001	64,6±4	+4 ,9	89,7	91,2	14	11
	0,0001	62,9±5	+3 ,7	91,4	87,4	14	12
DNC	0,1	41,2±4	+0 ,3	66,9	59,4	10	7
	0,01	66,2±5	+5 ,1	89,7	87,7	16	12
	0,001	62,5±4	+4 ,7	91,6	89,2	18	15

	0,0001	60,3±5	+3 ,2	90,3	86,4	15	11
Control-1, honey feeding up	-	40,2±3	+2 ,8	80,4	85,3	12	6
Control-2, without feeding up	-	29,1±3	-	66,5	70,4	6	3

\* Note: The value of td counted for each preparation comparing to the control - 1.