

**EVALUATION OF THE EFFECTS OF  
THE FEED SUPPLEMENT  
TURVAL 9 PIGEON TP6A  
ON FOECAL pH OF RACING  
PIGEONS**

## **PURPOSE OF THE TRIAL**

The purpose of the study was to evaluate the effects of the food supplement TURVAL 9 PIGEON TP6A (specific probiotic for pigeons) on the foecal pH of racing pigeons in comparison with brewer yeast (live) and apple vinegar (during different periods in order to avoid interferences in the results).

## **TIME OF THE TRIAL**

Starting date: August 2001  
Completion date: November 2001

## **COMPOUND TESTED**

TURVAL 9 PIGEON TP6A

Batch no.: 210252A

Description: light brown powder

Expiration date: June 2002

Storage conditions : cool and dry areas

Composition: balanced mixture of natural products such as Turval B03999 (mixture of selected lactic yeasts biologically activated, fermentation supports, cell metabolites, aminoacids, nucleotides, vitamins) fine wheat bran, diosmectite, flavours.

Manufacturer: Laboratori TURVAL ITALIA srl Pradamano (UD)  
( Authorization N° MG 252 dated September 27, 1994)

## **REFERENCE COMPOUNDS**

Commercial Brewer's yeast (live), Apple vinegar (home-made)

## **TEST SYSTEM**

Species: Columba livia

Number and age: 50 youngs ( born in 2001), 30 adults (10M + 20F) older than 1 year. During the trial period the animals were in moult.

Supplier: the trial was conducted at the Dr. Verardi racing pigeon's loft.  
Address: 20, Str. S. Pietro , 10010 Piverone (TO) Italy.  
Housing: all the pigeons were kept in racing pigeon lofts, the youngs separated from the adults.

Light: Natural light.

Feeding: the animals were fed with Muta Super Optimal (Versele-Laga s.a. Kapellestraat 70, B-9800 Deinze Belgique). Composition (See Annex 1)

Drinking: well water "ad libitum" (Analysis showed in Annex II)

Contaminants that might interfere with the objectives of the study were not expected to be present in feed or water.

## **TURVAL 9 PIGEON TP6A, YEAST AND VINEGAR ADMINISTRATION**

Weighed amounts of Turval 9 Pigeon TP6A were added to a saturated sugar solution in order to obtain a slurry. This slurry was mixed with the feed in order to obtain the dose of 1g of Turval 9 pigeon TP6A ( as dry matter)/pigeon/day of administration.

Weighed amounts of yeast were added to a saturated sugar solution in order to obtain a slurry. This slurry was mixed with the feed in order to obtain the dose of 1g of yeast

( as dry matter)/pigeon/day of administration.

The vinegar was added to drinking water at the ratio of 5ml/L

## **TRIAL DESCRIPTION**

Experimental design: on the basis of preliminary results, it was decided to follow this administration schedule sheet (Administration frequency Table1):

The 2 animal groups were administered with the Turval 9 Pigeon TP6A 6 days/week, one week/month for 4 months. The day before the beginning of the administration and 20 h after each administration 9 samples of foeces were collected , suspended in distilled water by shaking and the pH was measured in the supernatant with a pHmeter PHP 3 HI 98153 (Hannah Instruments). After 44 hours from the last administration a further pH measurement was done.

The brewer's yeast was administered to the 2 animal groups twice a week during the withdrawal of Turval 9 Pigeon TP6A. Just before the administration and 2.5, 3.25, 5.5, 17 and 20h after each administration 9 samples of foeces were collected suspended in distilled water by shaking and the pH was

measured in the surnatant with a pHmeter PHP 3 HI 98153 (Hannah Instruments).

The vinegar was administered to the 2 animal groups once a week during the withdrawal of Turval 9 Pigeon TP6A. Just before the administration and 2.5, 3.25, 5, 16 and 21h after the administration 9 samples of foeces were collected, suspended in distilled water by shaking and the pH was measured in the surnatant with a pHmeter PHP 3 HI 98153 (Hannah Instruments).

Table 1 - administration frequency

	<b>Youngs</b>	<b>Adults</b>
<b>Week 1</b>	Turval (6 times)	Turval (6 times)
<b>Week 2</b>	Yeast (monday/wednesday) Vinegar (saturday)	Yeast (monday/wednesday) Vinegar (saturday)
<b>Week 3</b>	Yeast (monday/wednesday) Vinegar (saturday)	Yeast (monday/wednesday) Vinegar (saturday)
Week 4	Yeast (monday/wednesday) Vinegar (saturday)	Yeast (monday/wednesday) Vinegar (saturday)

## RESULTS

The aim of the experiment was to evaluate the variation of the foecal pH of racing pigeons after administration of Turval 9 Pigeon TP6A in comparison with brewer's yeast (live) and apple vinegar.

The results are shown in figures 1, 2 and 3. The data reported in figures are the overall average of the values measured in each trial cycle.

The pH measured after the first administration of Turval 9 Pigeon TP6A (Figure 1), showed a slightly decrease in comparison to that measured before the administration (t 0h). After the 2<sup>nd</sup> administration the pH steeply decreased. From the 3<sup>rd</sup> measurement (after the 3<sup>rd</sup> administration of Turval 9 Pigeon TP6A) to the 6<sup>th</sup> (after the 6<sup>th</sup> administration of Turval 9 Pigeon TP6A), the pH started to increase reaching almost the same value measured at t 0h. After 44 hours the last administration of Turval 9 Pigeon TP6A the pH value steeply increased up to a value higher than that of time 0h.

After each yeast administration the pH values (compared to those of t 0h measurements) showed a slightly decrease (at t2.5 h measurement) that

proceeds steeply up to t 3.25 h measurement (Figure 2). Starting from the following observation the pH values began to increase going beyond the t 0 h value (sharply at t 5.5 h, and gradually at t 17h). The last pH value ( at t 20h) reached almost that of the t 0h.

The results obtained following the apple vinegar administration (Figure 3) showed a steeply decrease of the pH value at the t 2.5 h measurement, after that ( at t 3.25, 5 and 16h) the pH values started to increase reaching a value higher than that of t 0h (> 6.6). The last pH, measured at t 21h decreased almost to the t 0h value

## **CONCLUSIONS**

The results obtained in this trial showed that the activity of Turval 9 Pigeon TP6A becomes significant on the 2<sup>nd</sup> day when the pH value decreases from 6.1 to 5.8. After the 2<sup>nd</sup> day the effect gradually decreases due to the buffering response of the intestine. On withdrawal of the Turval 9 Pigeon TP6A the intestine retains the buffering action " through inertia" causing as a consequence an increase in the pH beyond those measured at t 0h.

On the other hand the effect of the brewer's yeast administration ( decrease of the pH and induction of the buffering action ) lasts only one day (20h), even if the pH variations are comparable to those caused by the Turval 9 Pigeon TP6A administration.

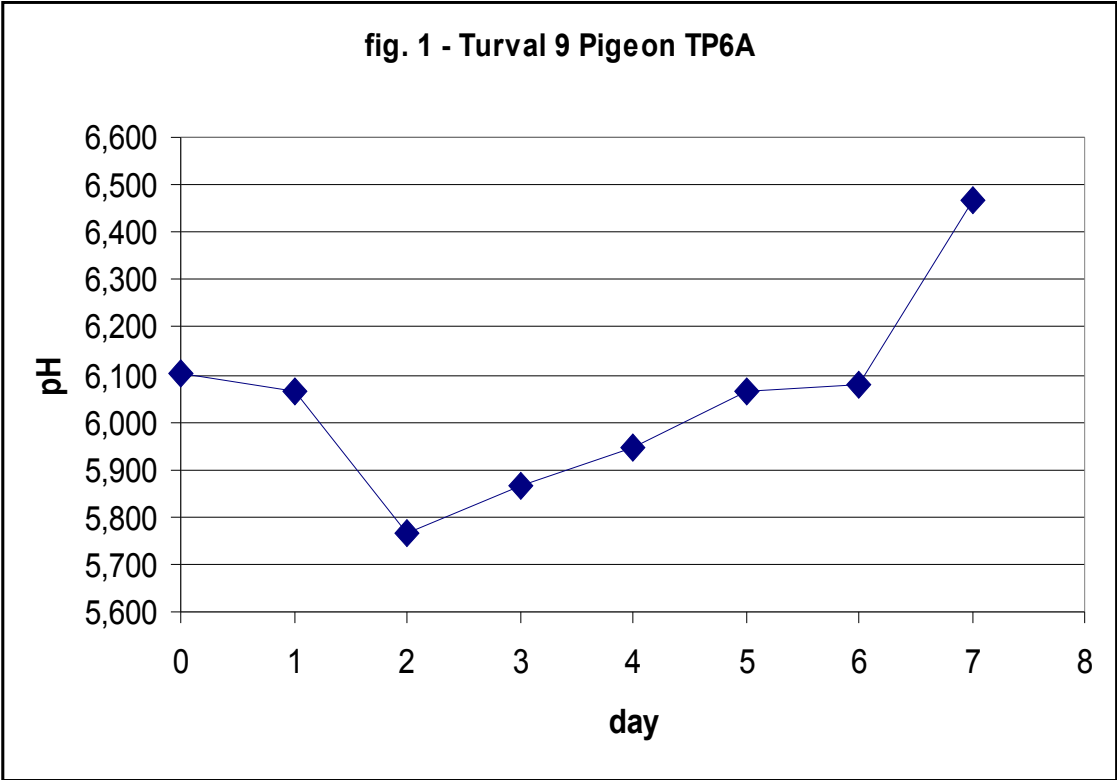
The effect of the apple vinegar administration follows the trend of that of the yeast even if the pH value variations are more marked.

Therefore it can be concluded that the optimum administration interval for Turval 9 Pigeon TP6A seems to be two days.

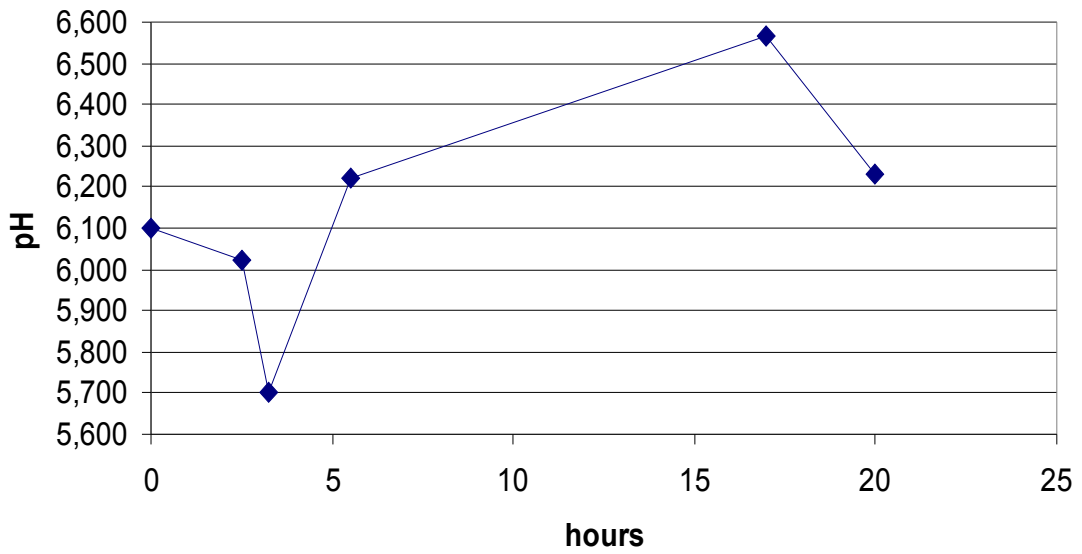
In the trial the only parameter "pH" was considered. In relationship with this parameter it is proved that the organism actively reacts the effects caused by the tested compounds by buffering in two opposite ways and counterbalancing reaching the homeostasis in each trial.

The organism reacting positively to controlled biological stress reaches a performance level higher than usual, that objectively produces an improvement of the development when the trials were conducted.

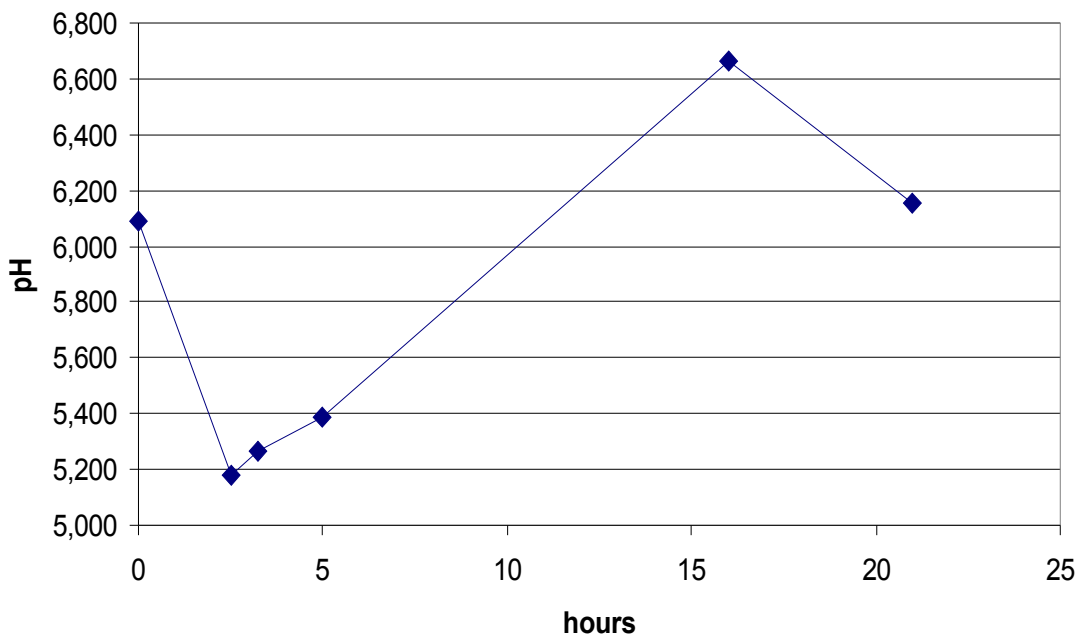
**FIGURES**



**fig. 2 - Yeast**



**fig.3 - Apple vinegar**



## **ANNEX 1**

### **FEED COMPOSITION**

#### **MUTA SUPER OPTIMAL**

CRIBS CORN (small)	20 %
Wheat	16%
Barley	5%
Durra	4%
Yellow millet	1.5%
Canary seeds	2%
Calibrated green peas	5%
Tasmania peas, Dune peas, White peas	22%
Vetch	6%
Sunflower	4%
Flax	3%
Thistle	6%
Rape	1.5%
Sorghum	2%
Sesame grains	1%
Conditioned seeds (special for pigeons)	1%



