What is VIUSID?

VIUSID-Vet Liquid* is a food supplement made up of antioxidants, vitamins, trace minerals and liquorice root extract (glycyrrhizinic acid).

It is especially designed to build up the immune system. It is ideal to treat diseases that cause immunodepression disorders and therefore it gets better productive parameters.

It is particularly suitable to be used as an adjuvant therapy in viral and parasitic illnesses, and to boost the immune system. It is also a powerful hepatoprotective agent.

Given the fact that it only contains natural ingredients, there are no side effects.

Box of 12 sachets of 270 ml. Ready to add in the water
Therapeutic indications

- Acute and chronic hepatopathy
- Antiviral action (it stimulates the production of interferons)
- Immunostimulatory effect
- Immunodepression disorders (Marek’s disease, Gumboro disease, anaemia, mycotoxicosis, etc.)
- Anaemia, weakness
- Severe post-vaccine reactions
Proven benefits

In broiler production:

1. Better feed conversion
2. Better weight gain
3. Better brood viability
4. Healthier birds
5. Better production quality
6. No withdrawal time
7. No resistance is built up
8. More cost-effective
Instructions for use

Broilers on arrival:

- Throughout the production cycle as an immunomodulator
- 7 days before and after each treatment and/or vaccination
- Critical stages of production, feeding
- Periods of stress
- Viral, bacterial and parasitic infections
- Immunodeficiency disorders
Dose

- 270 ml of VIUSID-Vet Liquid* can be used to prepare 500 L of drinking water.

Presentation

- 200 L containers with dispenser
- Boxes with 12 sachets of 270 ml. Ready to be added to the drinking water.
VIUSID contains

- Liquorice plant root extract from Mediterranean Europe and Asia Minor.
- Antiviral agents such as: Malic acid and glycyrrhizinic acid.
- Antioxidants such as: Malic acid and ascorbic acid.
- Antianemics: Folic acid, cyanocobalamin and pyridoxine.
- Immunomodulators: Arginine, glycine, glycyrrhizinic acid, calcium pantothenate and zinc.
- Biocatalytics: Zinc and calcium pantothenate.
Mechanism of action

✓ It re-establishes the liver functions and restores the biochemical parameters that indicate liver damage.

✓ The glycyrrhizinic acid inhibits the protein phosphorylation with Kinase-P, which it binds directly to reduce the Kinase activity. It can interact with the viral structures (proteins) and it has different effects according to the stage of the virus in question.

✓ The extra cellular free virus particles are inactivated. The assembly capacity of the virus deteriorates.
Mechanism of action

- Arginine (in Marek’s disease) makes the thymus bigger and increases the number of T cells; by doing so it cuts down on infection. It enhances the immune response and the healing of wounds. It has anti-tumour properties.

- Pyridoxine: This is needed to form antibodies and red blood cells. It stimulates the immune response.

- Folic acid: Antianemic. It increases the appetite of weakened birds.

- Glycine: It stimulates the secretion of glucagon, which is a hormone that facilitates the conversion of glycogen into glucose.
Mechanism of action

- Ascorbic acid: It provides protection against carcinogenic agents. It’s an antioxidant and has healing properties. It helps to prevent viral and bacterial infections. It boosts the immune system.

- The active ingredients of VIUSID—antiviral agents, amino acids, vitamins and antioxidants—enhance the biological performance of the organism to obtain better weight, yield and a healthier bird.
EVALUATION OF THE EFFECTIVENESS OF Viusid-Vet Liquid* ON THE PRODUCTIVE PARAMETERS AND ALSO ITS IMMUNOMODULATORY ACTION ON BROILERS AT A COMMERCIAL POULTRY FARM
MATERIAL AND METHODS

Objective

Evaluate the effectiveness of **Viusid-Vet Liquid** on the productive parameters and also how it works as an immunomodulator in broilers throughout the fattening period when it is added to their drinking water.

**Hypothesis:** Increase the humoral immune response when **Viusid-Vet Liquid** is added to the drinking water and improve the productive parameters of the broilers.

**Species:** *Gallus gallus*, Ross x Ross strain of broilers, both genders, aged one day old and housed in four sheds.

**Place:** Mesa 1 commercial poultry farm, located in Querétaro (Mexico). The sheds are fitted out with an automatic feed system and cupless nipple drinkers.
MATERIAL AND METHODS

**Product:** Viusid-Vet Liquid* made by Catalysis (Spain) and distributed by Laboratorio Dermaceutical México, S. A. de C. V. It is available in a metallic packet of 270 ml and it is added to the birds’ drinking water.

**Feed:** MADE BY THE COMPANY.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Sheds</th>
<th>Females</th>
<th>Males</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>16,794</td>
<td>12,116</td>
<td>28,910</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>12,156</td>
<td>16,754</td>
<td>28,910</td>
</tr>
<tr>
<td><strong>subtotal</strong></td>
<td>28,950 (43%)</td>
<td>28,870 (55%)</td>
<td>57,820</td>
<td></td>
</tr>
<tr>
<td><strong>Viusid-Vet Liquid</strong>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dose 270 ml/1000L</td>
<td>5</td>
<td>8,810</td>
<td>24,170</td>
<td>32,980</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>30,318</td>
<td>0</td>
<td>30,318</td>
</tr>
<tr>
<td><strong>subtotal</strong></td>
<td>39,128 (57%)</td>
<td>24,170 (45%)</td>
<td>63,298</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>121,118</td>
</tr>
</tbody>
</table>
Evaluation parameters at 21 days old

- % of mortality
- Weekly weight
- Weekly feed conversion
- Cumulative feed conversion

Serological and histopathological tests at 21 days:
HI-ND (20 samples of serum).
Histopathology (10 organs) of:
- Thymus
- Bursa of Fabricius
- Spleen
- Liver
RESULTS

From the results of the productive parameters of this clinical trial, the group treated with Viusid-Vet Liquid* were at a disadvantage in terms of the number of male (-10%) and female (+14%) birds compared to those in the control group.

The sexual dimorphism of the birds of the same age that were compared mainly produced differences in the live weight and therefore in the consumption and the body mass, which is all conveyed in the final results of the productive parameters.
**RESULTS**

Productive parameters of group treated with **Viusid-Vet Liquid*** vs. control group.

<table>
<thead>
<tr>
<th>Week</th>
<th>VIUSID</th>
<th>Control</th>
<th>%C. Mort</th>
<th>%C. Mort</th>
<th>C. Conv</th>
<th>C. Conv</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.148</td>
<td>0.170</td>
<td>-13%</td>
<td>0.53%</td>
<td>0.69%</td>
<td>-23%</td>
</tr>
<tr>
<td>2</td>
<td>0.368</td>
<td>0.416</td>
<td>-12%</td>
<td>1.31%</td>
<td>1.43%</td>
<td>-8%</td>
</tr>
<tr>
<td>3</td>
<td>0.723</td>
<td>0.830</td>
<td>-13%</td>
<td>2.17%</td>
<td>2.12%</td>
<td>3%</td>
</tr>
<tr>
<td>4</td>
<td>1,111</td>
<td>1,234</td>
<td>-10%</td>
<td>2.79%</td>
<td>2.89%</td>
<td>-4%</td>
</tr>
</tbody>
</table>
RESULTS

The weight of the birds from the control group was better than that of the birds from the group treated with Viusid-Vet Liquid* by the third week, although there was a relative improvement in their weight in the fourth week.

The average cumulative and weekly mortality was lower for the group treated with Viusid-Vet liquid* in the first and second week. By the end of fourth week, it was 4% lower, 0.10 real points, than that of the birds in the control group shed.

There were no significant differences in the average feed conversion between the two groups; in fact it was very similar with less than 1% difference between them.
RESULTS

The histopathological results are as follows:

The lymphoid tissue development was better in the birds treated with **Viusid Vet Liquid*** compared to the birds from the control group, the corresponding ratio was 80:20.
The histopathological results are as follows:

N.B.: No significant changes were observed in the lymphoid tissue of the birds treated with Viusid-Vet Liquid* during the 21 days of the clinical trial, as the thymus remained intact and undamaged in 90% of the samples.
RESULTS
The histopathological results are as follows:

N.B.: There were areas of lymphoid tissue development and recovery detected in 10% and 40% of the birds treated with **Viusid-Vet Liquid**

Serological graph results

The serological results are as follows:

3 samples of serum that did not have protective antibody titres against the ND virus were detected, another 37 samples of serum had protective antibody titres above the minimum level, with averages of 6.56 and 6.74, log 2, for the control group and **Viusid-Vet Liquid*** respectively.
The values produce a log 2 favouring the birds treated with **Viusid-Vet Liquid** in 0.18 log. to the base 2.
1. The immunodulatory effect of Viusid-Vet Liquid* on the lymphoid organs and tissue enhanced the birds’ health and it had favourable results on the productive parameters of mortality in the broilers in their first, second and fourth week of life.

1. The birds treated with Viusid-Vet Liquid* for 21 days developed more antibody titres against Newcastle’s disease (HI-ND) than the birds from the control group.

2. Viusid-Vet Liquid* improved the levels of lymphoid cells and it also favoured minimal lesions or the non-existence of lesions in the primary lymphoid tissues, namely, the spleen, bursa of Fabricius and thymus.
EVALUATION OF THE EFFECTIVENESS OF Viusid Vet Liquid* ON THE PRODUCTIVE PARAMETERS AND ALSO ITS IMMUNOMODULATORY ACTION ON BROILERS AT A COMMERCIAL POULTRY FARM

Box of 12 sachets of 270 ml. Ready to add in the water
MATERIAL AND METHODS

Objective
Evaluate the effectiveness of Viusid-Vet Liquid* on the productive parameters and also how it works like an immunomodulator in broilers throughout the fattening period when it is added to their drinking water until they are 35 days old.

Hypothesis
Increase the humoral immune response when Viusid-Vet Liquid* is added to the drinking water and improve the productive parameters of the broilers.

Material and methods.
Species: Gallus gallus, Ross x Ross strain of broiler, aged one day old, mixed gender and housed in four sheds.
MATERIAL AND METHODS

Place: Morita commercial poultry farm, located in Querétaro (Mexico).

Product: Viusid-Vet Liquid* made by Catalysis (Spain) and distributed by Laboratorio Dermaceutical México, S. A. de C. V. It is available in a metallic packet of 270 ml and it is added to the drinking water.

Feed: MADE BY THE COMPANY.

Evaluation time: From 1 to 35 days old.
Species: *Gallus gallus*, Ross x Ross strain of broiler, aged one day old, both genders and housed in four sheds.

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Sheds</th>
<th>Females</th>
<th>Males</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>3</td>
<td>8,924</td>
<td>22,216</td>
<td>31,140</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>8,716</td>
<td>22,320</td>
<td>31,036</td>
</tr>
<tr>
<td>subtotal</td>
<td></td>
<td>17,640(49%)</td>
<td>44,536(50.5%)</td>
<td>62,176</td>
</tr>
<tr>
<td>Viusid-Vet Liquid* Dose 540 ml/1000 L</td>
<td>1</td>
<td>9,216</td>
<td>21,809</td>
<td>31,025</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>9,216</td>
<td>21,809</td>
<td>31,025</td>
</tr>
<tr>
<td>subtotal</td>
<td></td>
<td>18,432(51%)</td>
<td>43,618(49.5%)</td>
<td>62,050</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td><strong>124,226</strong></td>
</tr>
</tbody>
</table>
MATERIAL AND METHODS

20 samples of serum and the organs from 10 birds were used to obtain histological sections for each group in the clinical trial.

Evaluated parameters at 35 days
- % of mortality
- Weekly weight
- Cumulative weekly feed conversion

Serological tests: HI-ND serum samples were taken when the birds were 21 and 35 days old.

Histopathological tests when the birds were 21 and 35 days old:
- Spleen
- Bursa of Fabricius
- Liver
- Thymus
RESULTS

Productive parameters recorded at Morita farm for the broilers that were continuously treated with Viusid-Vet Liquid* in a ratio of 540 ml/1000 L of drinking water, until they were 35 days old.

Data on weight, mortality and feed conversion is shown below:

GENERAL AVERAGE

<table>
<thead>
<tr>
<th>Week</th>
<th>VIUSID Weight</th>
<th>Control Weight</th>
<th>%C. Mort</th>
<th>%C. Mort</th>
<th>%C. Mort</th>
<th>C. Conv.</th>
<th>C. Conv.</th>
<th>%C. Conv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.1480</td>
<td>0.1495</td>
<td>1%</td>
<td>0.53%</td>
<td>0.55%</td>
<td>-5%</td>
<td>1.9650</td>
<td>1.9000</td>
</tr>
<tr>
<td>2</td>
<td>0.3285</td>
<td>0.3265</td>
<td>1%</td>
<td>1.43%</td>
<td>1.65%</td>
<td>-13%</td>
<td>1.6100</td>
<td>1.6300</td>
</tr>
<tr>
<td>3</td>
<td>0.7415</td>
<td>0.7575</td>
<td>-2%</td>
<td>2.27%</td>
<td>3.48%</td>
<td>-35%</td>
<td>1.3900</td>
<td>1.3500</td>
</tr>
<tr>
<td>4</td>
<td>1,131</td>
<td>1,100</td>
<td>3%</td>
<td>3.08%</td>
<td>4.44%</td>
<td>-31%</td>
<td>1.475</td>
<td>1.535</td>
</tr>
<tr>
<td>5</td>
<td>1,603</td>
<td>1,580</td>
<td>1%</td>
<td>3.72%</td>
<td>5.02%</td>
<td>-26%</td>
<td>1.560</td>
<td>1.655</td>
</tr>
</tbody>
</table>
The average weight per bird in the group treated with Viusid-Vet Liquid* increased by more than 77 g (1%), which is quite considerable compared to that of the birds in the control group.

The average cumulative and weekly mortality was lower for the group treated with Viusid-Vet Liquid* throughout the clinical trial. It dropped by 26%, 1.3 real points, more than that of the control group.

The final average feed conversion was 6% less, which is equivalent to 95 g of feed per kilo of weight, for the group treated with Viusid-Vet Liquid*. This is quite significant too.
## RESULTS

### Shed 1-VIUSID vs. Shed 3-Control group

<table>
<thead>
<tr>
<th>Week</th>
<th>Treatment</th>
<th>Control</th>
<th>Treatment</th>
<th>Control</th>
<th>Treatment</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SHED 1</td>
<td>SHED 3</td>
<td>SHED 1</td>
<td>SHED 3</td>
<td>SHED 1</td>
<td>SHED 3</td>
</tr>
<tr>
<td>1</td>
<td>0.144</td>
<td>0.149</td>
<td>-3%</td>
<td>0.52%</td>
<td>0.60%</td>
<td>-13%</td>
</tr>
<tr>
<td>2</td>
<td>0.317</td>
<td>0.325</td>
<td>-2%</td>
<td>1.46%</td>
<td>1.92%</td>
<td>-24%</td>
</tr>
<tr>
<td>3</td>
<td>0.736</td>
<td>0.755</td>
<td>-3%</td>
<td>2.33%</td>
<td>4.77%</td>
<td>-51%</td>
</tr>
<tr>
<td>4</td>
<td>1,125</td>
<td>1,120</td>
<td>0%</td>
<td>3.31%</td>
<td>5.98%</td>
<td>-45%</td>
</tr>
<tr>
<td>5</td>
<td>1,570</td>
<td>1,583</td>
<td>-1%</td>
<td>4.00%</td>
<td>6.71%</td>
<td>-40%</td>
</tr>
</tbody>
</table>
RESULTS

Shed 1-VIUSID vs. Shed 3-Control group

The average weight per bird in the group treated with **Viusid-Vet Liquid*** was 13 g (1%) less than that of the control group.

The average cumulative and weekly mortality was always lower for the group treated with **Viusid-Vet Liquid*** and by the end of the clinical trial, in the 5th week, it was 40% lower, 2.71 real points, than that of the birds in the control group, which is considerable in statistical terms (P<0.05).

The final average feed conversion was 4% less, which is equivalent to 60 g of feed per kilo of weight, for the group treated with **Viusid-Vet Liquid***. 
# RESULTS

Shed 2-VIUSID vs. Shed 4-Control group

<table>
<thead>
<tr>
<th>Week</th>
<th>Treatment</th>
<th>Control</th>
<th>Treatment</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SHED 2</td>
<td>SHED 4</td>
<td>SHED 2</td>
<td>SHED 4</td>
</tr>
<tr>
<td>1</td>
<td>0.152</td>
<td>0.150</td>
<td>0.53%</td>
<td>0.50%</td>
</tr>
<tr>
<td>2</td>
<td>0.340</td>
<td>0.328</td>
<td>1.40%</td>
<td>1.38%</td>
</tr>
<tr>
<td>3</td>
<td>0.747</td>
<td>0.760</td>
<td>2.21%</td>
<td>2.19%</td>
</tr>
<tr>
<td>4</td>
<td>1,136</td>
<td>1,079</td>
<td>2.85%</td>
<td>2.89%</td>
</tr>
<tr>
<td>5</td>
<td>1,635</td>
<td>1,577</td>
<td>3.43%</td>
<td>3.32%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week</th>
<th>Treatment</th>
<th>Control</th>
<th>Treatment</th>
<th>Control</th>
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<tbody>
<tr>
<td></td>
<td>SHED 2</td>
<td>SHED 4</td>
<td>SHED 2</td>
<td>SHED 4</td>
</tr>
<tr>
<td>1</td>
<td>1.830</td>
<td>1.920</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>2</td>
<td>1.520</td>
<td>1.610</td>
<td>1%</td>
<td>6%</td>
</tr>
<tr>
<td>3</td>
<td>1.370</td>
<td>1.350</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>4</td>
<td>1.460</td>
<td>1.560</td>
<td>1%</td>
<td>6%</td>
</tr>
<tr>
<td>5</td>
<td>1,520</td>
<td>1,650</td>
<td>3%</td>
<td>8%</td>
</tr>
</tbody>
</table>
RESULTS

Shed 2 VIUSID vs. Shed 4 Control group

The average weight per bird in the group treated with **Viusid-Vet Liquid** was 4% (58 g) more than that of the birds from the control group.

The average weekly mortality rate was the same until the 4th week and then it increased slightly by the end of the clinical trial in the control group, namely 0.11% more than that of the birds being treated with **Viusid-Vet Liquid**.

The average weekly and cumulative feed conversion was always better for the birds that were administered **Viusid-Vet Liquid**. It was 8% more than that of the control group by the end of the clinical trial, which is equivalent to 130 g of feed per kilo of weight, and this is considerable in statistical terms (P<0.05).
RESULTS

Histopathological graph results:

N.B.: In the histological tests, lymphoid tissue development was detected in the spleen of the birds from the control group (10%), whilst **Viusid-Vet Liquid*** was seen to provide more effective protection against damage (40%).
RESULTS

Histopathological graph results:

There was more lymphoid tissue development in the spleen of birds from the control group whilst **Viusid-Vet Liquid** was observed to be 60% more effective in reducing the damage done to the spleen tissue in the birds from the treatment group.

In short, the histological tests on the spleen showed that the lymphoid tissue development was similar in both groups at 21 and 35 days, although **Viusid-Vet Liquid** proved to be more effective (60%) in reducing the damage in the birds from the treatment group when they were 35 days old.
RESULTS

Histopathological graph results:

N.B.: There was a 10% increase in lymphoid tissue in the birds from the group treated with **Viusid-Vet Liquid** but no hepatic necrosis was detected. In contrast, necrotic lesions were observed in 10% of the tissue of birds from the control group.

***** There were no significant changes when the birds were 35 days old.
RESULTS

Histopathological graph results:

N.B.: The graph shows that the thymus of the birds treated with **Viusid-Vet Liquid*** was not altered in any way (lesions) compared to that of the birds in the control group, where atrophic lesions were observed in 10% of the tissue.
RESULTS

Histopathological graph results:

NB: At 35 days, the lesions in the thymus of the birds treated with **Viusid-Vet Liquid** had healed 100%. In the control group there was slight atrophy in 20% of the tissue.

In short, 100% of the lesions in the thymus of the birds treated with **Viusid-Vet Liquid** healed (apoptosis) whilst the birds from the control group had atrophic lesions in 20% of the tissue, which is quite an unusual challenge.
RESULTS

Histopathological graph results:

Heterophilic cells were seen to enhance the development of the bursal tissue in 25% of the birds treated with **Viusid Vet Liquid***. This was not the case of the birds from the control group (0%) when they were 21 days old.
RESULTS
Histopathological graph results:

When the birds were 35 days old, 60% and 40% of the severe and chronic lesions in the control group had healed compared to the group treated with Viusid-Vet Liquid*, that only had subacute and moderate lesions (100%).
The conclusion made is that the heterophilic cells enhanced the development of the bursal tissue in 25% of the birds from the group treated with Viusid Vet Liquid* compared to only 8% of the birds from the control group when they were 21 days old. At 35 days 60% and 40% of the severe and chronic lesions in the birds from the control group had healed.

The birds from the group treated with Viusid-Vet Liquid* had subacute and moderate lesions (100%).
RESULTS

Serological graph results:

The concentration of antibody titres against Newcastle’s disease in the group treated with **Viusid-Vet Liquid*** (P<0.05) was higher than that of the control group, which means that the birds treated with **Viusid-Vet Liquid*** produced a 0.65, log 2, more of antibodies than the birds in the control group when they were 21 days old.
The initial trend observed in the monitoring programme when the birds from the group treated with Viusid-Vet Liquid* were 21 days old remained the same until they were 35 days old.
RESULTS

Serological graph results:

The highest concentration of antibodies was 0.15, log 2, for the group treated with Viusid-Vet Liquid*. 

*Viusid avicultura
CONCLUSIONS

**Viusid-Vet Liquid*** proved to have an immunodulatory effect on the lymphoid organs and tissue of the birds up to 35 days old, as it enhanced their overall health and it favoured the productive parameters too.

1. The birds treated with **Viusid-Vet Liquid*** for 35 days developed better and more uniform antibody titres against Newcastle’s disease (HI-ND) than the birds from the control group.

2. According to the histopathological tests, **Viusid-Vet Liquid*** improved the levels of lymphoid cells and it also favoured minimal lesions or the non-existence of lesions in the primary lymphoid tissues, namely, the spleen, bursa of Fabricius and thymus.
Adding **Viusid-Vet Liquid*** to the birds’ drinking water does not alter their homeostasis or their symptomatology in any way after the product has been used. It does however improve the productive expression in strains of high yield broilers.

****Registered trade mark Viusid-Vet Liquid* by Catalysis (Spain). Distributed by Dermaceutical México, S.A. de C.V.

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Doctor of Veterinary Science and Animal Husbandry
Bibliography

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