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Animal Nutrition

Lipo ZAP

Pre-emulsified Monolaurin

BENEFITS

- **Minimises pathogen load**
- **Enhances growth performance**
- **Modulates the immune system**
- **Doesn't influence resistance**

"Alpha-monolaurin positively impacts birds' feed efficiency and immune response and can be applied as a natural immune enhancer in the broiler industry"

- Effect of Dietary Inclusion of Alpha-Monolaurin on the Growth Performance, Lipid Peroxidation, and Immunity Response in Broilers. ~Saleh, et al., 2021~

Reduced antibiotic use, increased sustainability

With increasing rates of microbial resistance to conventional antibiotics in livestock production, Ecolex Animal Nutrition's LIPO ZAP has the solution to combating this worldwide phenomenon. Monolaurin is a potential natural antimicrobial agent used in animal feed additives. The Ecolex emulsion system and the, Ecolex Knowledge and Discovery Center successfully enhanced the antimicrobial activity of monolaurin, reducing disease and enhancing growth and performance naturally.

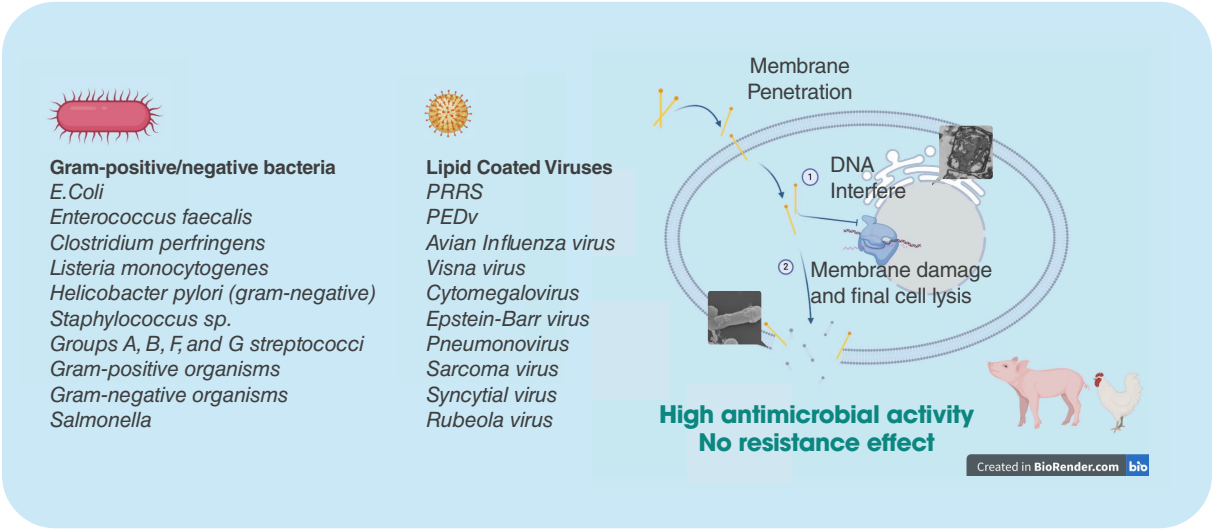
Lipo ZAP's antimicrobial mechanisms: a pathogen killer

Lipo ZAP contains this specially formulated monolaurin product and acts as an antimicrobial agent against a wide spectrum of pathogens including bacteria, fungi, and selected enveloped viruses. It's functions acts through three main mechanisms:

1. Destruction of lipid-coated bacterial and viral cell membranes by a penetrative process
2. Disruption of cellular signal translation and transcription
3. Stabilization of the host-cell (animal cell) membrane to avoid infection

The availability of certain mechanisms may be a factor that affects the bacterial developmental resistance against monolaurin. Monolaurin is proven to be an effective inhibitor against exotoxin production by gram-positive and gram-negative pathogenic bacteria's such as *E.coli, Enterococcus faecalis, Staphylococcus sp.*, *Salmonella*, and *Campylobacter sp*. Additionally, Lipo ZAP also works to deactivate lipid-coated viruses by binding to lipid-protein envelopes of the viruses. For example it works on like *Avian Influenza virus, PRRSv, PEDv,* and *ASFv.*

Antimicrobial Mechanism of Lipo ZAP



Lipo ZAP's antimicrobial mechanisms: An immunomodulator

Lipo ZAP has been successful in improving the immune system of livestock by encouraging anti-inflammatory properties. This is due to the ability of Lipo ZAP to produce immune-modulating elements through inflammatory reactions. The production of pro-inflammatory cytokines activates leukocytes to draw attention to the site of infection with limited reactive oxygen species production, therefore reducing the occurrence of tissue damage.

Additionally, Lipo ZAP boosts the immune system by increasing T-cell lymphocyte production and stimulating of splenocyte and T-cell proliferation. Lipo ZAP use reduces the rate of disease prevalence and the growth of pathogens. It also modulates the immune system by enhancing the antibody titre after vaccination or infection, which reduces inflammation and increases recovery.

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Not an AGP, but a production enhancer

Alpha-monolaurin has been demonstrated to improve intestinal morphology and animal performance primarily through modulation of the gut microbiota, which in turn alters gut function and gut metabolites. This alteration to the gut microbiota caused by Lipo ZAP increases short-chain fatty acid production and alters carbohydrate, amino acids, and lipid metabolism pathways in the cecum. In the broiler, two trial batches of Lipo ZAP given at an inclusion rate of 0.2% resulted in a 5% improvement in body weight and feed conversion ratio (FCR).

Broiler Trials

Batch 1

- **Control : basal diet**
- **Lipo ZAP : 0.2% Lipo ZAP**

Animal: 20000 birds
Trial period: 35 days

Batch 1	Final Body Weight	Feed Intake	FCR
Control	2132	3023	1.42
Lipo ZAP	2259	2997	1.33
Difference	5.96%	-	-6.43%

Batch 2

- **Control : basal diet**
- **Lipo ZAP : 0.3% Lipo ZAP**

Animal: 20000 birds
Trial period: 35 days

Batch 2	Final Body Weight	Feed Intake	FCR
Control	2167	3078	1.42
Lipo ZAP	2278	3001	1.32
Difference	5.12%	-	-7.25%

In the laying hens, Lipo ZAP 0.02% enhances 3.4% egg production rate and improves FCR by about 9%.

In the piglets, 0.2% Lipo ZAP increases 2.9% survival rate and improves the growth performance in body weight and FCR.

Piglets - PMWS: Postweaning Multisystemic Wasting Syndrome

- **Control Group**
- **Lipo ZAP : 0.2% Lipo ZAP**

Animal: 500 piglets/group (4 weeks old)
Trial period: 7 weeks

	Initial body weight	Weight gain	Final body weight	Intake	FCR	Survival rate (%)
Control	8.02	25.48	33.50	41.40	1.62	95.20
Lipo ZAP	7.97	26.63	34.60	41.50	1.56	98.10
Different		1.15	1.10		4.26%	2.90

In summary, a healthy gut improves the digestibility and absorption of nutrients to improve productivity.

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APPLICATIONS

- Used as a feed additive in the production of complete diets.

PACKAGING

- 25kg (55 lb) laminated PP woven paper bags.

FEEDING RECOMMENDATION

- Broiler : 0.02 - 0.03% in the completed feed
- Layer : 0.02 - 0.03% in the completed feed
- Swine : 0.1 - 0.3% in the completed feed

PRODUCTION

- Reduced pathogen load
- Enhances growth performance
- Regulates the immune system
- Doesn't influence anti-microbial resistance

STORAGE

- Store in a cool and dry place, keep away from direct exposure to sunlight and heat. 12 months shelf life.

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