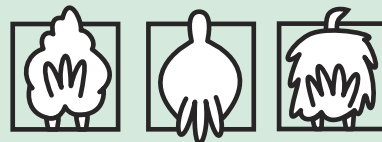


grow your assets



Avatec[®]

peace of mind

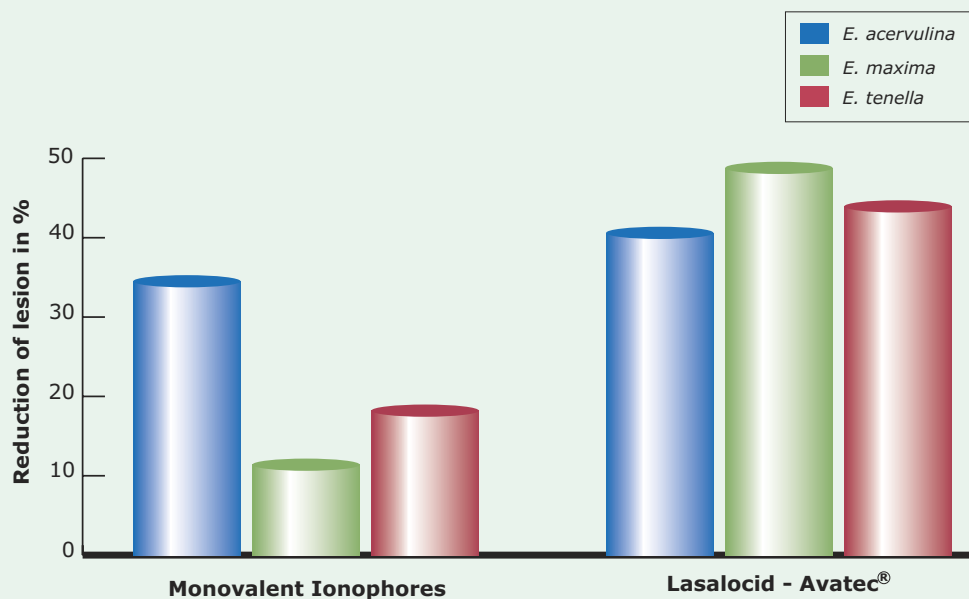
BEST PERFORMING IONOPHORE

Excellent efficacy against coccidiosis

As demonstrated in more than 50 Anticoccidial Sensitivity Tests (AST), Avatec® (lasalocid) shows the highest efficacy against the 3 most relevant broiler Eimeria species: *E. acervulina*, *E. maxima* and *E. tenella*.

GRAPH 1

AVERAGE RESULTS OF 52 AST ASSAYS 2000-2005



(S)Low resistance development

Mode of action

Avatec® (lasalocid) is the only divalent ionophore on the market: it mediates several kinds of ion pumps, responsible for the transport of both monovalent and divalent cations across membranes and thus disrupting the osmotic balance. (Monovalent ionophores work only on the ion pumps for monovalent cations)

Because of this double way of action, less cross resistance occurs between divalent and monovalent ionophores than within the monovalent ionophore group

Accurate dosing

The unique high shear granulation, guarantees a homogenous mixing and accurate dosing of Avatec®, resulting in a reduced risk for resistance.

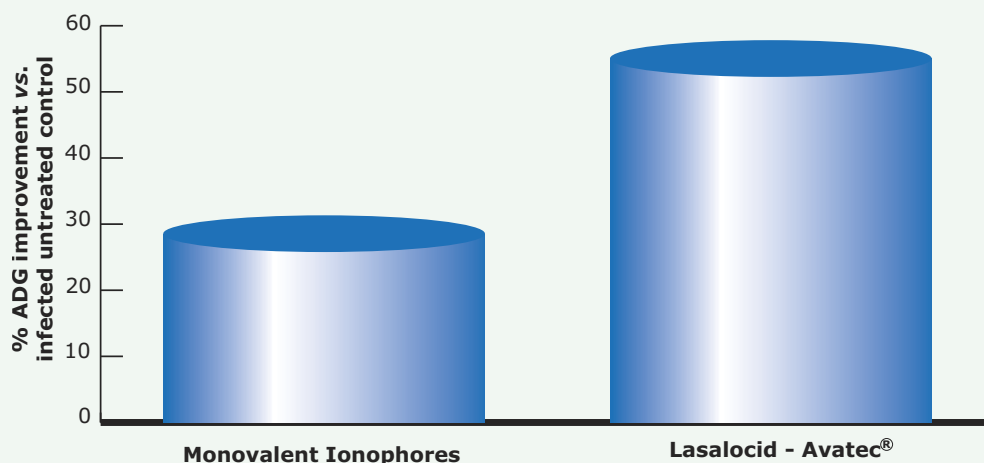
Very low cross resistance with other ionophores through the **unique mode of action** and the **accurate dosing**.

BEST PERFORMING IONOPHORE, IN ALL CIRCUMSTANCES

The highest rate of daily growth after severe challenge, compared to other ionophores

GRAPH 2

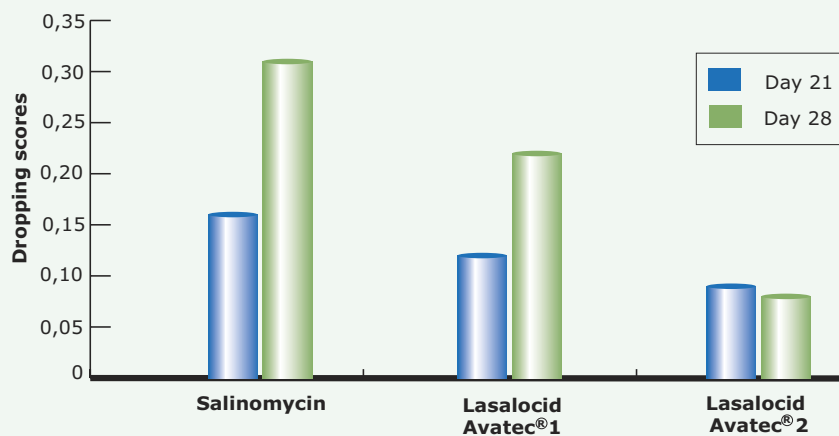
AVERAGE RESULTS OF 52 AST ASSAYS 2000-2005



Good droppings even in wet, cold climates as demonstrated by observations* from a field trial in North West Europe that ran from December 2004 till June 2005.

GRAPH 3

EVOLUTION OF DROPPING SCORES



*On day 21 and 28 the Elanco™ (1) litterbox™ (2) was used to evaluate water content of the droppings: score 1=if moisture of the dropping is bigger than 2 times the dropping, otherwise 0

*Elanco™ (1) and litterbox™ (2) are trademarks of Eli Lilly and Company

Best performing ionophore in hot climates

No draw back of water and feed intake, resulting in better economic performance under heat stress conditions.

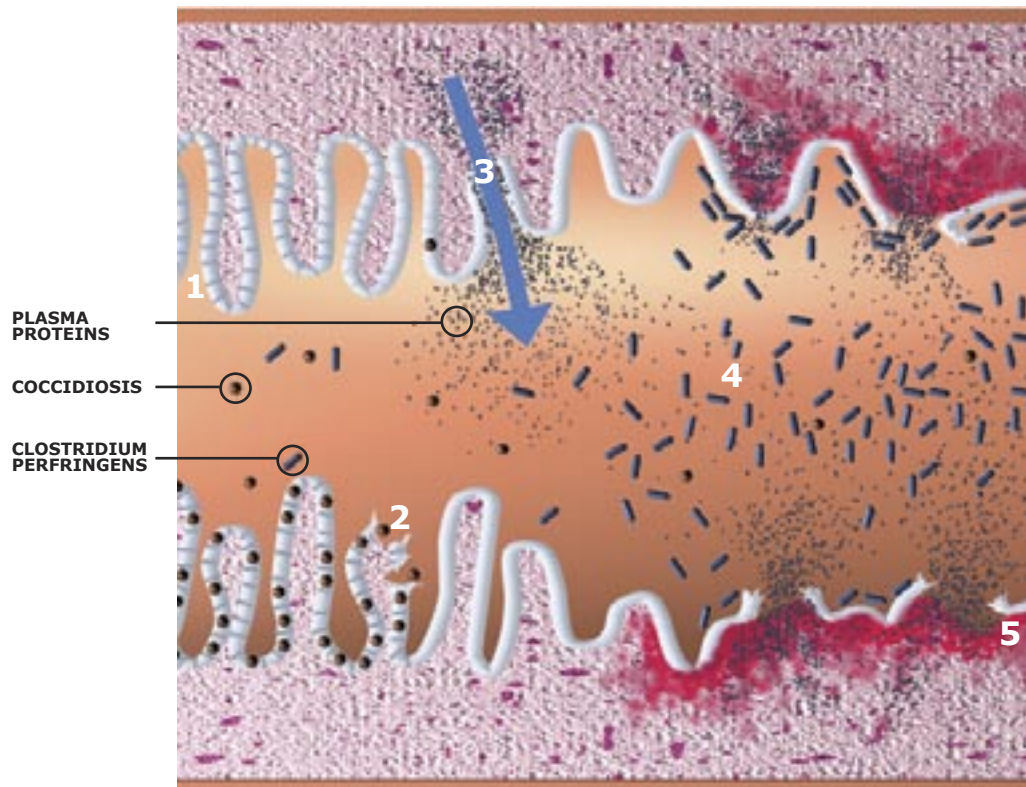
I INTERACTION COCCIDIOSIS-GUT CONTENT-CLOSTRIDIUM

75 to 90% broilers carry *Clostridium perfringens* in their guts, only a small number develop necrotic enteritis, depending on predisposing factors.

Predisposing factors of Necrotic Enteritis

— Diet (rye, wheat, barley): indigestible non-starch polysaccharides → increased viscosity of intestinal content → slower transit of the contents → predisposition for necrotic enteritis

— Coccidiosis → mucosal damage → (leaking) release plasma proteins in lumen → growth substrate for *Clostridium perfringens* → necrotic enteritis



- 1 - healthy mucosal layer
- 2 - coccidiosis damaging mucosal integrity
- 3 - leaking of plasma proteins
- 4 - proliferation of *Clostridium perfringens*
- 5 - destruction of mucosa and inflammation gut wall

P REMIUM BARRIER AGAINST CLOSTRIDIUM AND BACTERIAL OVERGROWTH

- Indirect by excellent coccidiosis control, a major predisposing factor
 - Avatec® gives coccidiosis no chance to damage the mucosa



- gut wall remains healthy

Avatec® offers a solid protection against necrotic enteritis by its **excellent coccidiosis control**

- Susceptibility of *Clostridium perfringens* strains to different substances with antibiotic activity*

Susceptibility of 44 strains of *Clostridium perfringens* to 12 agents with antibiotic activity was studied by establishing Minimal Inhibitory Concentrations. Included substances are used for therapy, growth promotion or prevention of coccidiosis.

| | # sensitive out of 44 strains | MIC ≤ µg/ml | | # sensitive out of 44 strains | MIC ≤ µg/ml |
|-------------|-------------------------------|-------------|------------------|-------------------------------|-------------|
| Lasalocid | 44 | 0,12 | Tylosin | 44 | 1,00 |
| Narasin | 44 | 0,12 | Maduramicin | 44 | 2,00 |
| Avilamycin | 44 | 0,25 | Flavomycin | 44 | 64,00 |
| Monensin | 44 | 0,25 | Lincomycin | 16 | 0,50 |
| Salinomycin | 44 | 0,25 | Chlortetracyclin | 15 | 0,12 |
| Amoxicillin | 44 | 0,50 | Oxytetracyclin | 15 | 0,12 |

*Susceptibility of *Clostridium perfringens* strains from broiler chickens to antibiotics and anticoccidials, A. Martel, L.A. Devriese, K. Cauwerts, K. De Gussem, A. Decostere and F. Haesebrouck *Avian Pathology* (February 2004) 33(1),3-7

- Lasalocid (Avatec®), as other ionophores, shows MIC's at very low concentrations.

THE IONOPHORE WITH THE MRL

No unexpected surprises with Avatec®

Maximum Residue Limit

i.e. "the maximum concentration of residue ...in mg / kg or µg / kg on a fresh weight basis which may be accepted by the European Union to be legally permitted or recognized as accepted in or on food"

Objectives of the MRL regulation:

— Protection of the customer against possible harmful effect resulting from residues

— **Facilitate the marketing and free circulation within the EU of foodstuffs of animal origin**

Zero Residue Tolerance is no longer applicable on Avatec® for poultry. Even if the analytical methods become more sensitive.

The EU accepts the following concentrations in edible tissues:

Maximum Residue Limits accepted by the Committee for Veterinary Medicinal Products of the EMEA (European Medicines Agency) for Poultry in different tissues:

| Target tissue | MRL (µg/kg) |
|---------------|--|
| Muscle | 20 |
| Skin + Fat | 100 |
| Liver | 100 |
| Kidney | 50 |
| Eggs | 150 (positive opinion published by CVMP) |

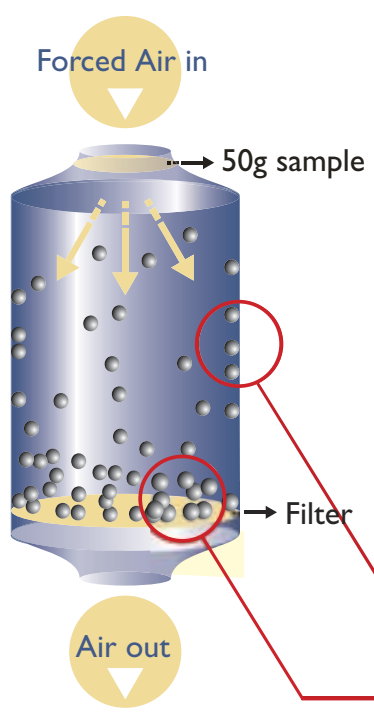


Conclusion:

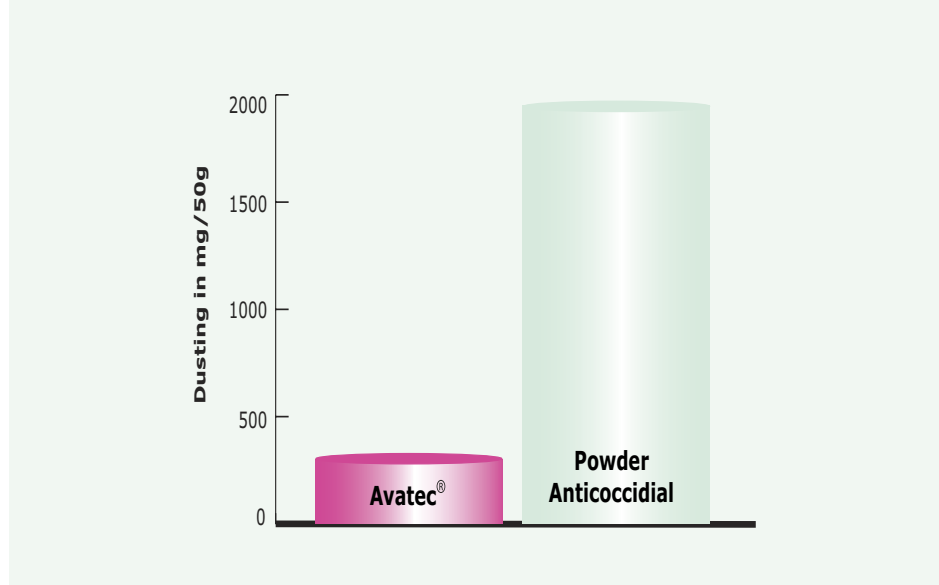
Tissue with concentrations lower than the MRL can be marketed and commercialised.

SUPERIOR GRANULATION PROCESS

High shear granulation



GRAPH 4 NEGLIBLE DUST IN HEUBACH DUSTING TEST



- Clipping dust in flask: a measure of electrostatic loss
- Air-borne dust on filter: a measure of air-borne loss

— No extra flushing needed (GMP manufacturing standards)

Research has shown that the results of the wall adhesion test for micro-ingredients correlate well with the extent of carry-over in a production installation for animal feeds.

— Low wall adhesion factor of 0.4 for Avatec® 150G

The wall adhesion factor is calculated from the relation between lasalocid in the second batch and the amount of fed left from the first batch.

If the result is lower than 1 no flushing is needed according to GMP manufacturing standards.



A VATEC[®] HELPS YOU GROW YOUR ASSETS

— Reliable granulation

Reduced carry over → Minimises need for flushing → Reducing costs in production

— Solid protection of the gut

Excellent performance in AST's

Optimal coccidiosis control for broilers, turkeys and replacement pullets

Excellent economic performance

Superior performance even under severe infection pressure

Proper action against necrotic enteritis

Superior anticoccidial action, thus eliminating a major predisposing factor of necrotic enteritis and enteric disorders.

— Established MRL

No risk for commercial limitations after the withdrawal period has been respected

Avatec[®], Grow your assets



For more information, please contact
your ALPHARMA Animal Health representative



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