

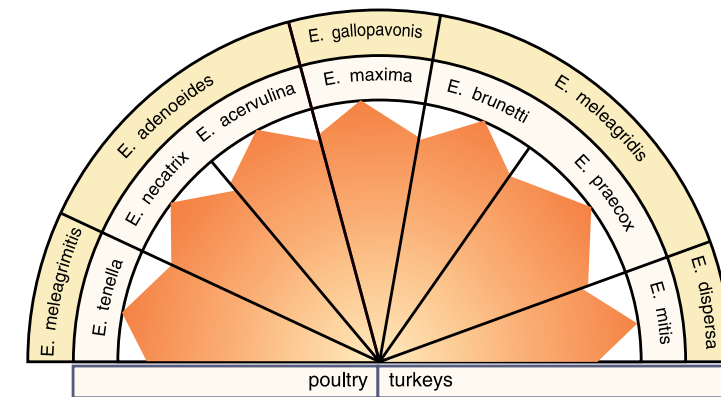
**UNIQUE ANTICOCIDIAL TRIPLE ACTION**

**MODE OF ACTION**

Stenorol® is a feed additive, purposed for poultry for the prophylactic control of the coccidial species *E. acervulina*, *E. maxima*, *E. tenella*, *E. necatrix*, *E. brunetti*, *E. praecox* and *E. mitis* in chickens for fattening and as well as for *E. meleagridis*, *E. adenoides*, *E. gallopavonis*, *E. meleagridis* and *E. dispersa* in turkeys (graph 1).

**Graphic 1**

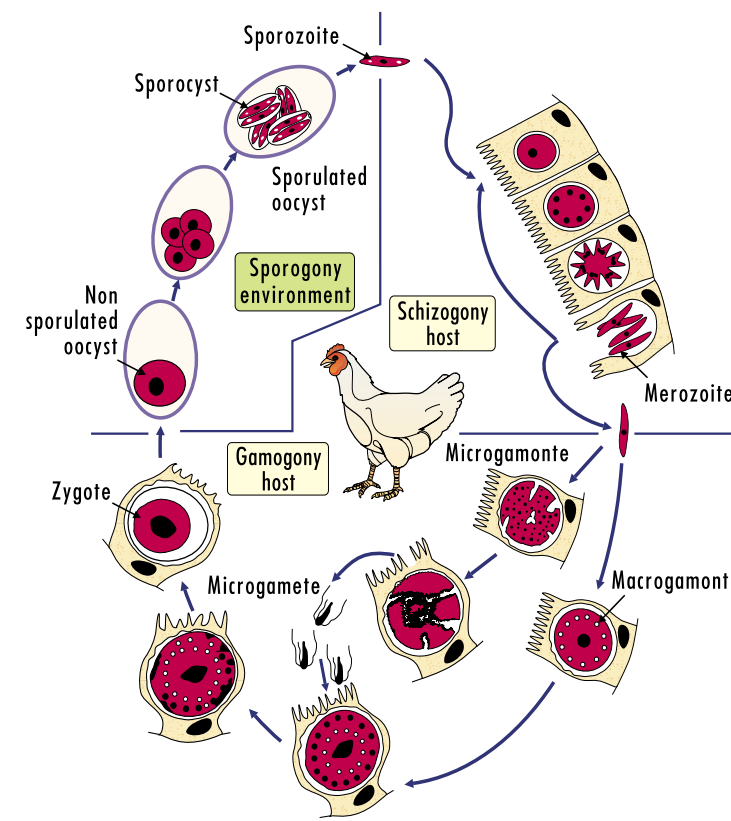
**Stenorol® - broad spectrum efficacy**



Halofuginone, which is the active ingredient of Stenorol®, is a synthetic bromochlorinated derivative of the alkaloid febrifugine. It is a member of a unique chemical group, and is therefore chemically independent from all other anticoccidials. It acts at three stages in the coccidial life cycle: sporozoites, and later on the first generation of schizonts and second generation of schizonts. (diagram 1)

**Diagram 1**

**THE CYCLE OF THE PARASITE**



*Sporogony* : stage when oocysts (free living forms in the environment) sporulate in order to become infective

*Schizogony* : sporozoite (infectious form) penetration in the host cells and series of asexual multiplications

*Gamogony* : Sexual stage of the life cycle leading to fertilization, zygote formation and oocyst output in the environment

Stenorol® is a coccidiostat, which blocks protein synthesis in the parasite.

Stenorol® works only against the parasite. It does not disturb the intestinal environment of the avian host or interfere with nutrient absorption and therefore does not induce side effects or require special feed reformulations to compensate for its effects. Because of its activity at 3 stages in the parasitic life cycle Stenorol® can safely replace any previous anticoccidial at any stage during the broiler rearing cycle (up to withdrawal). There are no known incompatibilities with any feed additives or therapeutics (in feed or water treatment).

**RESISTANCE**

Since the chemical structure of Stenorol® is unlike that of any other coccidiostats, there is no cross-resistance between Stenorol® and any other anticoccidial. Alternating Stenorol® with coccidiostats having different modes of actions - especially the ionophores, like i.e. Sacox® - helps to limit the coccidial resistance pressure. This strategic use of alternate coccidiostats maximizes efficacy, avoids cross-resistance and ultimately prolongs the effective lifetime of each drug.



**Table 2**

DOSAGE				
Target species	Minimum and maximum content of halofuginone hydrobromide in complete feedingstuff (ppm)	Quantity of Stenorol® incorporated into the feedingstuff (g/ton)	Maximum age weeks	Withdrawal period
Chickens for fattening	2-3	333-500	-	5 days
Turkeys	2-3	333-500	12	5 days

**WIDE MARGIN OF SAFETY: EFFECTIVE IN UNDERDOSAGE, SAFE IN OVERDOSAGE**



**MODE OF ADMINISTRATION**

Stenorol® is a free-flowing premix of halofuginone hydrobromide with the following composition per 1000 grams:

**Table 1**

Active constituent-halofuginone	6 g
Other constituents: inert carrier-corn cobs	994 g
Total	1000 g

Stenorol® should be mixed thoroughly into broiler feeds at level of 333g or 500 g per ton of finished feed to provide a concentration of respectively 2 and 3 ppm. To obtain a homogenous mix, it is recommended to incorporate Stenorol® into a secondary premix prior to mixing into finished feed.

**EFFICACY**

Efficacy of Stenorol® has been demonstrated in different challenge trials and under field conditions. In a recent field trial performed in Belgium in 2012 under commercial circumstances the efficacy of Stenorol® has been proved again. In this trial, in which 128000 commercial broilers were involved, 2 different groups were compared.

**Treatment groups:**

- Stenorol® at a concentration of 2 ppm from day 1 till day 30 of age

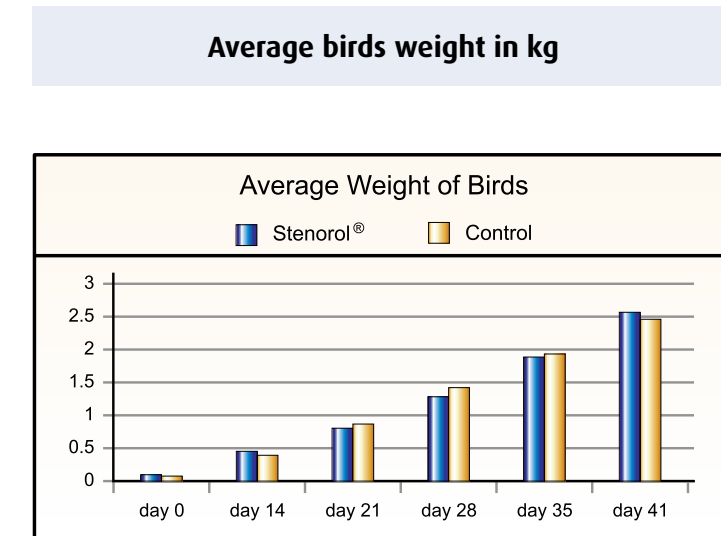
- Control group receiving a shuttle programme with the combination product nicarbazin/narasin at a concentration of 50/50 ppm till 21 days, followed by Sacox® (salinomycin) at a concentration of 60 ppm till 34 days. Weight of the birds at different time points indicated that there was no difference in growth rate between the Stenorol® group and the group receiving the shuttle program nicarbazin/narasin-salinomycin. Examination of carcass weight and carcass composition after slaughtering showed no significant differences between the groups, except for the amount of waste, which was significantly lower in the Stenorol® group. (see Table 3)



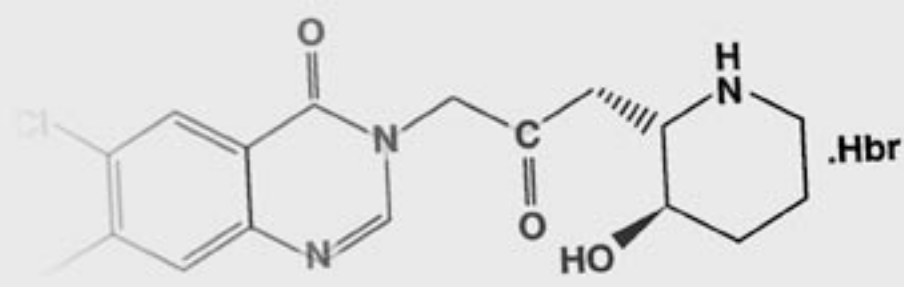
**Table 3**

Average carcass weight			
Average	Control	Stenorol®	P-value
Feet	83	82	0,67
Breast	399	380	0,43
Leg	346	327	0,17
Drumstick	194	187	0,39
Wings	154	145	0,14
Waste	280	258	0,03

**Graphic 2**

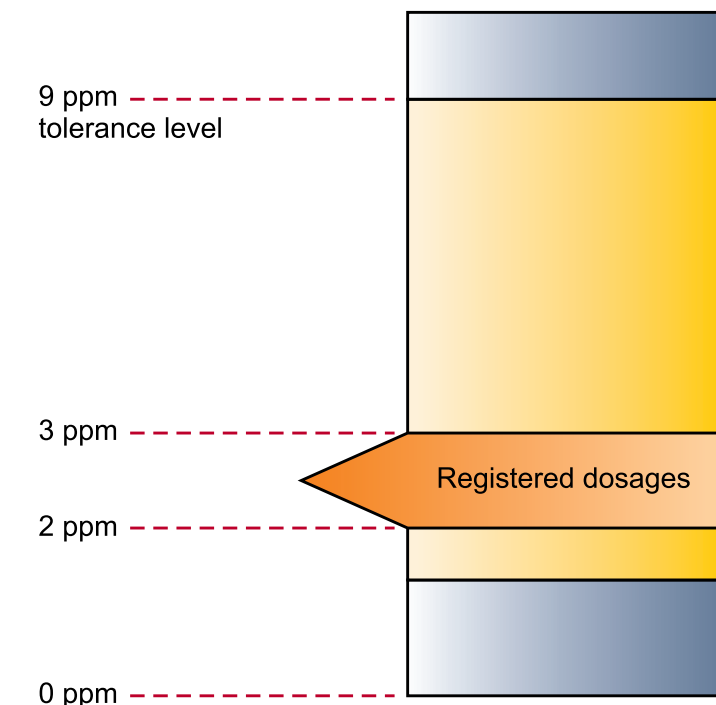






## Effective against all major of Eimeria species

Graphic 3



### SAFETY

Commercially, Stenorol® has a wide margin of safety in both under- and overdosage, which can be summarized as follows for broilers :

Table 4

0-1.5 ppm	No anticoccidial effect
1.5-2 ppm	Acceptable anticoccidial effect
2-6 ppm	Safe dosage with registered dosage of 2-3 ppm
6-9 ppm	No serious consequences to the animal
Over 9 ppm	Depression of feed intake and growth rate progressively worse with increasing dosage

Halofuginone is an extremely effective anticoccidial when used in broilers, pullets, and turkeys. Weight gain and feed conversion are unaffected until more than twice the recommended dose.

No problems of compatibility or combined toxicity have been observed when used in conjunction with other feed additives. Since the chemical structure of Stenorol® is unlike any other coccidiostat, there is no cross resistance between Stenorol® and any other anticoccidial product.

### ADDITIONAL INFORMATION

#### ELIMINATION

Stenorol® is rapidly eliminated in the faeces. The litter in the poultry houses, in which Stenorol® is administered, can be utilized without danger; this has been carefully checked by a study involving several different types of crops.

#### WITHDRAWAL PERIOD: 5 days

Treated chickens must not be slaughtered for use in food for at least 5 days after the latest supplementation.

#### SIDE EFFECTS

Laboratory tests have shown that Stenorol® in the recommended dosage range of 2 - 3 ppm does not cause any side effects on growth performance, feed conversion, feathering, subcutaneous fat and taste of meat. There is no correlation between heat stress and the use of Stenorol®. There is no impact on water consumption.

#### CONTRAINDICATIONS

Do not feed to layers or breeder birds in production, young guinea fowls, ducks and water fowls. The use of Stenorol® is also not recommended in young quails, pigeons and red-legged partridges because of feed refusal and reduction of the weight gain.

#### WARNING

Use only as directed. Do not use feed containing Stenorol® for the treatment of outbreaks of coccidiosis. As with all feed additives, caution should be exercised when handling Stenorol®. Direct contact with skin and eyes should be avoided by wearing protective gloves, clothing and dust masks. Dust must not be breathed. Keep this and all drugs out of the reach of children.

#### SHELF LIFE

Stenorol® is stable for 6 months when included in premixtures and 3 months in finished feeds. Stenorol® is stable under all conditions of modern poultry feed production (pelletting, extruding, expanding).

#### STENOROL®- BENEFITS

- Proven broad spectrum efficacy
- 3-stage anticoccidial effect
- Effective development of immunity
- Control of coccidiosis during periods of immune suppression
- Unique chemistry limits possibility of cross resistance to other anticoccidials
- Compatible with all feed additives and therapeutics
- No feed reformulation requirements
- No adverse effects on water consumption or litter quality
- No negative side effects (i.e. heat stress, feathering, pigmentation)
- Low lesion scores and low oocyst output

#### STORAGE

In the original packing, well closed, in dry and well-ventilated facilities, protected from direct sunlight at temperature between 15 and 25°C.



#### PACKAGING

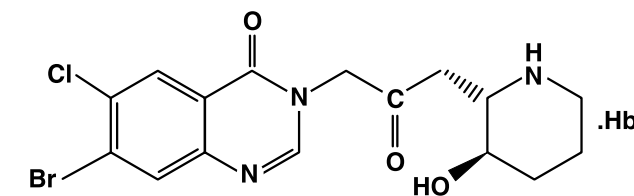
20 kg PE-lined multi-wall paper bags. Check with your local Huvepharma representative which pack sizes are available in your region as this may vary.

#### DISCLAIMER

1. Registration outside EU is also valid for chickens reared for laying.
2. Shelf period-Please, check with your local registration.
3. Withdrawal period- 5 days. For non-EU countries, please, check with your local distributor for further information.

#### INTRODUCTION

Stenorol® is a 0,6% premix, containing 6g/kg of its active ingredient halofuginone with carrier substance corn cobs. It is a greyish white homogenous mixture. Halofuginone is derived from febrifugine, one of the alkaloids, contained in Dichroa, which is an extract of the plant *Dichroa febrifuga*. Dichroa has been used for centuries as a treatment for malaria and can be found in the traditional Chinese pharmacopoeia. Thus, although manufactured by chemical synthesis, halofuginone is derived from a natural product, whose antiparasitic activity has been used successfully for hundreds of years.



Stenorol® 0.6% (halofuginone)



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