Summary of Product Characteristics

1 NAME OF THE VETERINARY MEDICINAL PRODUCT

Seresto 1.25 g + 0.56 g, collar for dogs <= 8 kg

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Active substances:

One collar of 38 cm (12.5 g) contains 1.25 g imidacloprid and 0.56 g flumethrin as active substances.

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Collar.
Grey, odour free collar.

4 CLINICAL PARTICULARS

4.1 Target Species

Dogs (≤ 8 kg).

4.2 Indications for use, specifying the target species

For the treatment and prevention of flea (*Ctenocephalides felis, C. canis*) infestation for 7 to 8 months.
Protects the animal's immediate surroundings against flea larvae development for 8 months.
Seresto can be used as part of a treatment strategy for the control of Flea Allergy Dermatitis (FAD).

The product has persistent acaricidal (killing) efficacy against tick infestations (*Ixodes ricinus, Rhipicephalus sanguineus, Dermacentor reticulatus)* and repellent (anti-feeding) efficacy against tick infestations (*Ixodes ricinus, Rhipicephalus sanguineus)* for 8 months. It is effective against larvae, nymphs and adult ticks.
Ticks already on the dog prior to treatment may not be killed within 48 hours after collar application and may remain attached and visible. Therefore, removal of ticks already on the dog at the time of application is recommended. The prevention of infestations with new ticks starts within two days after application of the collar.
The product provides indirect protection against the transmission of the pathogens *Babesia canis vogeli* and *Ehrlichia canis* from the tick vector *Rhipicephalus sanguineus*, thereby reducing the risk of canine babesiosis and canine ehrlichiosis for 7 months.

Reduction of the risk of infection with *Leishmania infantum* via transmission by sand flies for up to 8 months.

For treatment of biting/chewing lice (*Trichodectes canis*) infestation.

4.3 Contraindications

Do not treat puppies less than 7 weeks of age.
Do not use in case of hypersensitivity to the active substances or to any of the excipients.

4.4 Special warnings for each target species

Ticks will be killed and fall off the host within 24 to 48 hours after infestation without having had a blood meal, as a rule. An attachment of single ticks after treatment cannot be excluded. For this reason, a transmission of infectious diseases by ticks cannot be completely excluded if conditions are unfavourable.
Although a significant reduction in the incidence of *Leishmania infantum* in dogs has been demonstrated, the product has shown variable repellent (anti-feeding) and insecticidal efficacy against the sand fly *Phlebotomus perniciosus*. As a result, bites by sand flies may occur, and the transmission of *Leishmania infantum* cannot be completely excluded. The collar should be

applied just before the beginning of the period of activity of sand fly vectors corresponding to the *Leishmania infantum* transmission season and worn continuously throughout the risk period.

Ideally, the collar should be applied before the beginning of the flea or tick season.

As in all longterm topical products, periods of excessive seasonal hair shedding may lead to transient slight reduction of efficacy by loss of hair-bound portions of the active ingredients. Replenishment from the collar starts immediately so that full efficacy will be re-established without any additional treatment or collar replacement.
For optimum control of flea problems in heavily infested households it may be necessary to treat the environment with a suitable insecticide.

The product is water resistant; it remains effective if the animal becomes wet. However, prolonged, intense exposure to water or extensive shampooing should be avoided as the duration of activity may be reduced. Studies show that monthly shampooing or water immersion does not significantly shorten the 8 months efficacy duration for ticks after redistribution of the active substances in the coat whereas the product's flea efficacy gradually decreased, starting in the 5th month.
The influence of shampooing or water immersion regarding the transmission of canine leishmaniosis has not been examined.

4.5 Special precautions for use

Special precautions for use in animals

Not applicable.

Special precautions to be taken by the person administering the veterinary medicinal product to animals

Keep the bag with the collar in the outer packaging until use.
As with any veterinary medicinal products, do not allow small children to play with the collar, or to put it into their mouths. Pets wearing the collar should not be allowed to sleep in the same bed as their owners, especially children. Imidacloprid and flumethrin are continuously released from the collar to the skin and fur whilst the collar is being worn.
The product may cause hypersensitivity reactions in some people.
People with known hypersensitivity (allergy) to the ingredients of the collar should avoid contact with the veterinary medicinal product.
The product may cause skin, eye and respiratory irritation in some people in very rare cases. In case of eye irritation, flush the eyes thoroughly with cold water. In case of skin irritation, wash the skin with soap and cold water. If symptoms persist it is recommended to seek medical advice and show the package leaflet or label to the physician.
Immediately dispose of any remnants or cut-offs of the collar (see section 4.9).
Wash hands with cold water after fitting the collar.

4.6 Adverse reactions (frequency and seriousness)

In rare cases behavioural disorders that may include hiding, vocalisation, hyperactivity, excessive licking and/or grooming or scratching at the application site may be observed in animals that are not used to wearing collars on the first few days after fitting. Aggression after collar application was reported in very rare cases. Ensure that the collar is fitted correctly.
Application site reactions such as pruritus, erythema and hair loss may occur. These have been reported as rare and usually resolve within 1 to 2 weeks. In single cases, a temporary collar removal may be recommended until the symptoms have disappeared.
In very rare cases, application site reactions such as dermatitis, inflammation, eczema, lesions or haemorrhage may occur and in these instances, collar removal is recommended.
In rare cases neurological symptoms as ataxia, convulsions and tremor may occur. In these cases collar removal is recommended.
Also in rare cases in dogs, slight and transient reactions as depression, change of food intake, salivation, vomiting and diarrhoea might occur initially.

The frequency of adverse reactions is defined using the following convention:
- very common (more than 1 in 10 animals treated displaying adverse reaction(s))
- common (more than 1 but less than 10 animals in 100 animals treated)
- uncommon (more than 1 but less than 10 animals in 1,000 animals treated)
- rare (more than 1 but less than 10 animals in 10,000 animals treated)
- very rare (less than 1 animal in 10,000 animals treated, including isolated reports)

4.7 Use during pregnancy, lactation or lay

Laboratory studies with either flumethrin or imidacloprid in rats and rabbits have not produced any effects on fertility or reproduction and showed no teratogenic, or foetotoxic effects. However, the safety of the veterinary medicinal product has not been established in target animals during pregnancy and lactation and in the absence of available data, the product is therefore not recommended in pregnant and lactating bitches.

4.8 Interaction with other medicinal products and other forms of interactions

None known.

4.9 Amounts to be administered and administration route

Cutaneous use. One collar per animal to be fastened around the neck.
Small dogs up to 8 kg body weight receive one collar of 38 cm length.
Dogs above 8 kg receive one collar for dogs > 8 kg of 70 cm length.
For external use only.

Remove collar from protective bag directly before use. Unroll collar and make sure that there are no remnants from the plastic connectors inside the collar. Adjust the collar around the animal's neck without tightening it too tight (as a guide, it should be possible to insert 2 fingers between the collar and the neck). Pull excess collar through the loop and cut off any excess length extending beyond 2 cm.

The collar should be worn continuously for the 8 month protection period and should be removed after the treatment period. Check periodically and adjust fit if necessary, especially when puppies are rapidly growing.

This collar is designed with a safety-closure mechanism. In the extremely rare event of a dog being trapped, the animals own strength is usually sufficient to widen the collar to allow for quick release.

4.10 Overdose (symptoms, emergency procedures, antidotes), if necessary

Due to the nature of the collar overdosage is unlikely and signs of overdosage are not to be expected.
An overdosage of 5 collars around the neck was investigated in adult dogs for an 8 months period and in 7 week old puppies for a 6 months period and no adverse effects were observed besides slight hair loss and mild skin reactions.
In the unlikely event of the animal eating the collar mild gastrointestinal symptoms (e.g. loose stool) may occur.

4.11 Withdrawal period(s)

Not applicable.

5 PHARMACOLOGICAL or IMMUNOLOGICAL PROPERTIES

Pharmacotherapeutic group: ectoparasiticides, insecticides and repellents, pyrethrins and pyrethroids, Flumethrin combinations
ATCvet code: QP53AC55

5.1 Pharmacodynamic properties

Imidacloprid is an ectoparasiticide belonging to the chloronicotinyl group of compounds. Chemically, it can be classified as a chloronicotinyl nitroguanidine. Imidacloprid is active against larval flea stages, adult fleas and lice. Efficacy against fleas (*Ctenocephalides felis* and *Ctenocephalides canis*) starts within 48 hours after application of the collar. In addition to the indications listed under section 4.2 an activity against *Pulex irritans* fleas has been demonstrated.

Imidacloprid has a high affinity for the nicotinergic acetylcholine receptors in the post-synaptic region of the central nervous system (CNS) of the flea. The ensuing inhibition of cholinergic transmission in insects results in paralysis and death. Due to the weak nature of the interaction with mammalian nicotinergic receptors and the postulated poor penetration through the blood-brain barrier in mammals, it has virtually no effect on the mammalian CNS. Imidacloprid has minimal pharmacological activity in mammals.

Flumethrin is an ectoparasiticide of the synthetic pyrethroid group. According to current knowledge the synthetic pyrethroids interfere with the sodium channel of nerve cell membranes, resulting in a delay in repolarisation of the nerve and finally killing of the parasite. In studies on structure-activity relationship of a number of pyrethroids interference with receptors of a certain chiral conformation was noted thereby causing a selective activity on ectoparasites. No anti-cholinesterase activity was noted with these compounds. Flumethrin is responsible for the product's acaricidal activity and also prevents production of fertile eggs by its lethal effect on female ticks. In an *in-vitro* study 5 to 10 % of *Rhipicephalus sanguineus* ticks exposed to a sublethal dose of 4 mg flumethrin/L laid eggs which had a modified appearance (shrivelled, dull and dry) indicating a sterilising effect.

In addition to the tick species listed under section 4.2 activity has been demonstrated against *Ixodes hexagonus, I. scapularis* and the non-European tick species *Dermacentor variabilis* and the Australian paralysis tick *I. holocyclus*.

The product provides repellent (anti-feeding) activity against the claimed ticks, thus preventing repelled parasites from taking a blood meal and thereby indirectly aids in the reduction of the risk of Canine Vector-Borne Disease transmission.
In addition to the pathogens listed in section 4.2, indirect protection against the transmission of *Babesia canis canis* (by *Dermacentor reticulatus* ticks) has been shown in one laboratory study at day 28 after treatment, and indirect protection against the transmission of *Anaplasma phagocytophilum* (by *Ixodes ricinus* ticks) has been shown in one laboratory study at 2 months after treatment, thereby reducing the risk of diseases caused by these pathogens under the conditions of these studies.

Data from efficacy studies against sand flies (*Phlebotomus perniciosus*) showed a variable sand fly repellent (anti-feeding) efficacy ranging from 65 to 89% for 7-8 months following initial application of the collar. Data from 3 clinical field studies performed in endemic areas indicate a significant reduction in the risk of *Leishmania infantum* transmission by sand flies in treated dogs compared to non-treated dogs. Depending on the infection pressure by sand flies the efficacy in the reduction of the risk of infection with leishmaniosis ranged from 88.3 to 100%.

The collars were able to improve the *Sarcoptes scabiei* infestation in pre-infested dogs leading to a full cure after three months.

5.2 Pharmacokinetic particulars

Both active ingredients are slowly and continuously released in low concentrations from the polymer matrix system of the collar towards the animal. Both actives are present in the dog's haircoat in acaricidal/insecticidal concentrations during the entire efficacy period. The active substances spread from the site of direct contact over the entire skin surface. Target animal overdose and serum kinetic studies have established that imidacloprid reached the systemic circulation transiently while flumethrin was mostly not measurable. Oral absorption of both active substances is not relevant for the clinical efficacy.

5.3 Environmental properties

See section 6.6.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Titanium dioxide (E 171)
Iron oxide black (E 172)
Dibutyladipate
Propylene glycol dicaprylocaprate
Epoxidised soybean oil
Stearic acid
Polyvinyl chloride

6.2 Major incompatibilities

None known.

6.3 Shelf-life

Shelf-life of the veterinary medicinal product as packaged for sale: 5 years

6.4 Special precautions for storage

This veterinary medicinal product does not require any special storage conditions.

6.5 Nature and composition of immediate packaging

Box containing one single or two 38 cm polyvinyl chloride based collar(s) individually packed into a PETP/PE bag.
Carton pack containing twelve 38 cm polyvinyl chloride based collars individually packed into a PETP/PE bag.
Not all pack sizes may be marketed.

6.6 Special precautions for the disposal of unused veterinary medicinal products or waste materials derived from the use of such products

Any unused veterinary medicinal product or waste materials derived from such veterinary medicinal products should be disposed of in accordance with local requirements.
This product should not enter water courses as it may be dangerous for fish and other aquatic organisms.

7 MARKETING AUTHORISATION HOLDER

Bayer Limited
The Atrium
Blackthorn Road
Dublin 18
Ireland

8 MARKETING AUTHORISATION NUMBER(S)

VPA10021/063/002

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 21 October 2011
Date of last renewal: 02 September 2016

10 DATE OF REVISION OF THE TEXT

February 2020