



**Veterinary  
Medicines  
Directorate**

**United Kingdom  
Veterinary Medicines Directorate  
Woodham Lane  
New Haw  
Addlestone  
Surrey KT15 3LS**

**NATIONAL PROCEDURE**

**PUBLICLY AVAILABLE ASSESSMENT REPORT FOR A VETERINARY  
MEDICINAL PRODUCT**

**Cevac Salmune ETI K Suspension for Injection for Chickens**

**Date Created: May 2025**

## MODULE 1

### PRODUCT SUMMARY

Name, strength and pharmaceutical form	Cevac Salmune ETI K Suspension for Injection for Chickens, Suspension for injection
Applicant	Ceva Animal Health Ltd, Unit 3, Anglo Office Park, White Lion Road, Amersham, Buckinghamshire, HP7 9FB
Active substance(s)	<p><i>Salmonella enterica</i>, subsp. <i>enterica</i>, serovar Enteritidis, strain 038-90, inactivated</p> <p><i>Salmonella enterica</i>, subsp. <i>enterica</i>, serovar Typhimurium, strain 076-94, inactivated</p> <p><i>Salmonella enterica</i>, subsp. <i>enterica</i>, serovar Infantis, strain SM-595, inactivated</p>
ATC Vetcode	QI01AB01
Target species	Chickens
Indication for use	<p>For the active immunisation of chickens (breeders and layers) from 10 weeks of age to reduce faecal excretion with <i>Salmonella</i> Enteritidis, <i>Salmonella</i> Typhimurium and <i>Salmonella</i> Infantis.</p> <p><b><i>Salmonella</i> Enteritidis:</b>          Onset of immunity: 4 weeks after 2nd vaccination          Duration of immunity: until 69 weeks after 2nd vaccination</p> <p><b><i>Salmonella</i> Typhimurium:</b>          Onset of immunity: 4 weeks after 2nd vaccination          Duration of immunity: until 71 weeks after 2nd vaccination</p> <p><b><i>Salmonella</i> Infantis:</b>          Onset of immunity: 4 weeks after 2nd vaccination          Duration of immunity: until 44 weeks after 2nd vaccination</p>

## **MODULE 2**

The Summary of Product Characteristics (SPC) for this product is available on the Product Information Database of the Veterinary Medicines Directorate.

[www.gov.uk/check-animal-medicine-licensed](http://www.gov.uk/check-animal-medicine-licensed)

## MODULE 3

### PUBLIC ASSESSMENT REPORT

Legal basis of original application	Full application in accordance with Article 8 of Veterinary Medicine Regulations (VMRs) 2013 (Schedule 1, Part 1) as amended.
Date of conclusion of the procedure	25/03/2025

#### I. SCIENTIFIC OVERVIEW

The product was submitted for a full application for authorisation in Great Britain (GB), in accordance with Article 8 of Veterinary Medicine Regulations (VMRs) 2013 (Schedule 1, Part 1) as amended.

Cevac Salmune ETI K is an inactivated vaccine containing *Salmonella* Enteritidis (S. Enteritidis) strain 038-90, *Salmonella* Typhimurium (S. Typhimurium), strain 076-94 and *Salmonella* Infantis (S. Infantis), strain SM-595 as the active substances. The finished product is presented as a suspension for injection. The vaccine is indicated for the immunisation of chickens (breeders and layers) from 10 weeks of age to reduce faecal excretion caused by S. Enteritidis, S. Typhimurium and S. Infantis. The basic vaccination schedule is two injections (0.5 ml each) administered by the intramuscular route, 4 weeks apart. The recommended age for the first vaccination is from 10 weeks. The second vaccination should be given no later than 4 weeks before the onset of lay. The onset of immunity is 4 weeks after the second vaccination for all the serovars, and the duration of immunity is 69 weeks after the second vaccination for S. Enteritidis, 71 weeks for S. Typhimurium and 44 weeks for S. Infantis.

The product is produced and controlled using validated methods and tests which ensure the consistency of the product released on the market. It has been shown that the product can be safely used in the target species, any reactions observed are indicated in the SPC<sup>1</sup>. The product is safe for the user, the consumer of foodstuffs from treated animals and for the environment, when used as recommended. Suitable warnings and precautions are indicated in the SPC. The efficacy<sup>2</sup> of the product was demonstrated according to the claims made in the SPC. The overall benefit/risk analysis is in favour of granting a marketing authorisation.

<sup>1</sup> SPC – Summary of product Characteristics.

<sup>2</sup> Efficacy – The production of a desired or intended result.

## **II. QUALITATIVE AND QUANTITATIVE PARTICULARS OF THE CONSTITUENTS**

### ***II.A. Composition***

The product contains *S. Enteritidis*, strain 038-90, *S. Typhimurium*, strain 076-94 and *S. Infantis*, strain SM-595 and the excipients thiomersal, trometamol (TRIS), maleic acid, sodium chloride, sodium hydroxide and water for injections.

The container/closure system consists of low-density polyethylene (LDPE) bottles sealed with bromobutyl rubber stoppers and aluminium plastic caps. The particulars of the containers and controls performed are provided and conform to the regulation.

The choice of the adjuvant, vaccine strains, inactivating agent and presence of preservative are justified.

The inactivation process and the detection limit of the control of inactivation are correctly validated.

The product is an established pharmaceutical form and its development is adequately described in accordance with the relevant regulatory guidelines.

### ***II.B. Method of Preparation of the Product***

The product is manufactured fully in accordance with the principles of good manufacturing practice from a licensed manufacturing site. The manufacturing method consists of: working seed bacteria (WSB) inoculation, first preculture, scale up culture steps (up to 3), production culture, inactivation, blending, filling, finished product testing, packing and storage.

Process validation data on the product have been presented in accordance with the relevant regulatory guidelines.

### ***II.C. Control of Starting Materials***

The active substances are *S. Enteritidis*, strain 038-90, *S. Typhimurium*, strain 076-94 and *S. Infantis*, strain SM-595, established active substances with specifications and certificates of analysis adequately provided. The active substances are manufactured in accordance with the principles of good manufacturing practice.

Starting materials of non-biological origin used in production comply with the relevant pharmacopoeia monographs or certificate of analysis.

Biological starting materials used are in compliance with the relevant Ph. Eur. Monographs and guidelines and are appropriately screened for the absence of extraneous agents, according to the Ph. Eur.

The master and working seeds have been produced according to the Seed Lot System as described in the relevant guideline.

The information provided for the containers and closures are in compliance with the pharmacopeial requirements.

#### ***II.C.4. Substances of Biological Origin***

There are no substances within the scope of the TSE Guideline present or used in the manufacture of this product.

#### ***II.D. Control Tests Carried Out at Intermediate Stages of the Manufacturing Process***

The tests performed during production are described.

#### ***II.E. Control Tests on the Finished Product***

The tests performed on the final product conform to the relevant requirements.

The demonstration of the batch-to-batch consistency is based on the results of 3 consecutive batches, produced according to the method described in the dossier. Other supportive data provided confirm the consistency of the production process.

#### ***II.F. Stability***

Stability data on the active substances have been provided in accordance with applicable regulatory guidelines, demonstrating the stability of the active substance when stored under the approved conditions.

Stability data on the finished product have been provided in accordance with applicable regulatory guidelines, demonstrating the stability of the product throughout its shelf life when stored under the approved conditions.

The in-use shelf-life of the broached vaccine is supported by the data provided.

#### ***G. Other Information***

The shelf life of the veterinary medicinal product as packaged for sale is 2 years. The shelf life after first opening the immediate packaging is 10 hours.

The product should be stored and transported refrigerated (2 °C – 8 °C). The product should not be frozen and should be protected from light.

### **III. SAFETY ASSESSMENT**

#### ***Laboratory trials***

The safety of the administration of one dose and the repeated administration of one dose, in the target animal, was demonstrated in two safety studies. The first was a laboratory study, investigating the safety of the administration of one dose, as well as a repeated dose, and the second was a field trial.

The investigation was performed according to the recommendations of Directive 2001/82/EC as amended and the relevant guidelines/Ph. Eur. monograph.

Based on the results, there are no safety concerns following the administration of 1.5 times the vaccine formulation, when administered according to the primary vaccination schedule to the target species, of the minimum recommended age.

No investigation of effect on reproductive performance was conducted because the vaccine is not intended for this category of animals. The vaccine should not be used in birds in lay and within 4 weeks before the start of the laying period.

There are no data suggesting that this product might adversely affect the immune system of the vaccinated animal, or its progeny, therefore a specific study was not carried out.

The vaccine is inactivated and thus the specific tests to be performed for live vaccines are not applicable.

The adjuvant and excipients used are either below the level for Maximum residue levels (MRL) testing or have no MRLs required. Based on this information, no withdrawal period is proposed.

No specific assessment of the interaction of this product with other medicinal product was made. Therefore, an appropriate warning in the SPC is included.

### ***Field studies***

One field trial was conducted to demonstrate the safety of the vaccine when used under field conditions in Hungary.

The trial was a combined safety and efficacy field trial. It was a GCP compliant, multi-centre, randomised, positive controlled study of parallel group design.

Safety was assessed in layer pullets, following vaccination according to the vaccination schedule. A comparator vaccine was used as a positive control.

Results showed that after administration of the vaccine to layer pullets at the recommended dose, following the primary vaccination schedule at the minimum recommended age, there were no safety concerns.

### ***Ecotoxicity***

The applicant provided a Phase 1 Environmental Risk Assessment, in compliance with the relevant guideline, which showed that no further assessment was required.

No warnings regarding special precautions for the protection of the environment were required.

## **IV. CLINICAL ASSESSMENT (EFFICACY)**

Fifteen studies were submitted to show the efficacy of the product. These comprised of thirteen laboratory studies and two field trials, all complied with the relevant regulatory requirements.

## **Clinical Studies**

### **Laboratory Trials**

The efficacy of the product has been demonstrated in thirteen laboratory studies, in accordance with the relevant requirements. All trials were conducted in the target species, using the recommended route of administration and schedule of administration.

An adequate challenge model in which to evaluate the effect of the vaccine was used in the trials.

### **Dose confirmation:**

A dose was selected based upon the available scientific information, expert opinion and relevant published data. From this starting point decreasing titrations were assessed to achieve the optimum dose for each of the antigen components.

### **Onset of Immunity:**

Five onset of immunity studies were carried out in 10-week-old chickens with different bacterial challenges: one involved challenge with *S. Enteritidis*; two involved challenge with *S. Typhimurium*; two involved challenge with *S. Infantis*. Four of the studies used Specific Pathogen Free (SPF) chickens and one used commercial chickens.

In four of the studies the vaccine was administered to 32-34 chickens by the intramuscular route and 32-34 chickens were left as unvaccinated controls. One study differed with group sizes of 75 birds. A second vaccination was administered to the vaccinated chickens 4 weeks later, according to the recommended schedule.

Both the vaccinated and unvaccinated controls were challenged with the respective virulent *Salmonella* spp., four weeks after vaccination. Faecal sampling for the relevant *Salmonella* strain was performed to determine the level of positive birds.

In the pivotal study, for each strain, it was shown that the number of positive tests was significantly lower in the vaccinated chickens compared to the unvaccinated controls. Therefore, a reduction in faecal excretion was demonstrated for each *Salmonella* strain listed in the indications for use.

### **Duration of Immunity:**

Eight duration of immunity studies were conducted using birds taken from one of the field studies. The vaccine was administered at 10 weeks of age, according to the recommended vaccination schedule. Challenge was conducted at different timepoints to investigate duration of immunity. Two control groups were used: one group were vaccinated with a comparator vaccine, as a positive control; and the second group remained unvaccinated.

Three studies involved challenge with *Salmonella* Enteritidis lasting for different time periods: 26 weeks; 49 weeks; 69 weeks. Faecal samples supported a reduction of faecal excretion for a 69-week duration of immunity for this strain.

Three studies involved challenge with *Salmonella* Typhimurium lasting for different time periods: 39 weeks; 51 weeks; 71 weeks. Faecal samples supported a reduction of faecal excretion for a 71-week duration of immunity for this strain.

Two studies involved challenge with *Salmonella* Infantis, one lasting for 44 weeks and the other 60 weeks. Faecal samples supported a reduction of faecal excretion for a 44-week duration of immunity for this strain.

### **Field Trials**

Two, GCP compliant, field trials, were conducted in Hungary. One of these studies investigated the vaccine efficacy following administration of two doses by the intramuscular route, four weeks apart. In this study, 1049 commercial layer chickens of 10-weeks of age were randomly divided into three groups: 425 Cevac Salmune ETI K vaccinated; 424 positive control group; and 200 unvaccinated controls. No natural challenge occurred, so chickens were used in laboratory efficacy studies, where challenge was conducted at different times for each serovar to investigate duration of immunity.

Results showed that there was a serological response to Cevac Salmune ETI K vaccination. In the absence of natural infection, it was not possible to confirm efficacy of the vaccine under field conditions, however laboratory efficacy tests were conducted to confirm that animals vaccinated in the field and subsequently challenged under laboratory conditions were protected.

Data generated from the studies concluded that interference from maternally derived antibodies (MDA) can be excluded in birds that are vaccinated at 10 weeks of age, due to the absence of MDA in birds of this age.

## **V OVERALL CONCLUSION AND BENEFIT– RISK ASSESSMENT**

The data submitted in the dossier demonstrate that when the product is used in accordance with the Summary of Product Characteristics, the benefit/risk profile of the product is favourable.

## **MODULE 4**

### **POST- AUTHORISATION ASSESSMENTS**

The SPC and package leaflet may be updated to include new information on the quality, safety and efficacy of the veterinary medicinal product. The current SPC is available on the Product Information Database of the Veterinary Medicines Directorate website.

[www.gov.uk/check-animal-medicine-licensed](http://www.gov.uk/check-animal-medicine-licensed)

The post-authorisation assessment (PAA) contains information on significant changes which have been made after the original procedure which are important for the quality, safety or efficacy of the product.

The PAA for this product is available on the Product Information Database of the Veterinary Medicines Directorate website.

[www.gov.uk/check-animal-medicine-licensed](http://www.gov.uk/check-animal-medicine-licensed)