



## Summary of Studies Supporting USDA Product Licensure

Establishment Name	Zoetis Inc.
USDA Vet Biologics Establishment Number	190
Product Code	15P5.20
True Name	Canine Influenza Vaccine, H3N2, Killed Virus
Tradename(s) / Distributor or Subsidiary (if different from manufacturer)	Vanguard CIV H3N2 - No distributor specified
Date of Compilation Summary	February 09, 2021

**Disclaimer: Do not use the following studies to compare one product to another. Slight differences in study design and execution can render the comparisons meaningless.**

<b>Study Type</b>	Efficacy																					
<b>Pertaining to</b>	Canine Influenza Virus (CIV), H3N2																					
<b>Study Purpose</b>	To demonstrate effectiveness against canine influenza virus, H3N2																					
<b>Product Administration</b>	Two doses, administered subcutaneously, 3 weeks apart.																					
<b>Study Animals</b>	Study involved 20 vaccinated and 20 placebo puppies, 7-8 weeks of age.																					
<b>Challenge Description</b>	Challenged with CIV H3N2, 14 days following administration of the second vaccination.																					
<b>Interval observed after challenge</b>	After challenge, animals were observed twice daily for clinical signs of respiratory disease (moderate nasal discharge, coughing, sneezing, depression, retching, labored breathing, fever ( $\geq 39.5$ °C)) for 6 days. Lungs were evaluated at 6 days post-challenge.																					
<b>Results</b>	<p>Efficacy was based on discrete lung lesions.</p> <p><b>Table 1:</b> Five number summary of lung lesion scores by treatment group. Percentage of lung mass abnormal (consolidated) was calculated for every animal (<math>Q_1 = 25^{\text{th}}</math> percentile; <math>Q_3 = 75^{\text{th}}</math> percentile).</p> <table border="1"> <thead> <tr> <th></th> <th>N</th> <th>Minimum</th> <th><math>Q_1</math></th> <th>Median</th> <th><math>Q_3</math></th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td><b>Vaccinate</b></td> <td>17</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.9</td> </tr> <tr> <td><b>Control</b></td> <td>20</td> <td>0.7</td> <td>5.2</td> <td>10.4</td> <td>20.4</td> <td>38.4</td> </tr> </tbody> </table> <p>Note: Three dogs (within the vaccinate group) were removed from the lesion score because of atelectasis at lung examination.</p> <p>The supporting clinical signs and pathological lung lesion data were shown to be complementary. For an animal to be considered as diseased, two or more clinical signs were required to be present on 2 or more consecutive days.</p> <p><b>17/20 control animals were affected</b>  <b>0/20 vaccinated animals were affected</b></p> <p>The raw data are shown on attached page.</p>		N	Minimum	$Q_1$	Median	$Q_3$	Maximum	<b>Vaccinate</b>	17	0.0	0.0	0.0	0.0	0.9	<b>Control</b>	20	0.7	5.2	10.4	20.4	38.4
	N	Minimum	$Q_1$	Median	$Q_3$	Maximum																
<b>Vaccinate</b>	17	0.0	0.0	0.0	0.0	0.9																
<b>Control</b>	20	0.7	5.2	10.4	20.4	38.4																
<b>USDA Approval Date</b>	January 11, 2017																					

**Table 2: Individual animal raw data for lung consolidation (lesions)**

<b>Treatment</b>	<b>Animal</b>	<b>Percent Consolidation</b>
Control	CDI-6	1.17
	ZTI-6	7.79
	DEJ-6	11.95
	DFJ-6	19.92
	ZRJ-6	20.45
	CFJ-6	4.86
	ALJ-6	0.72
	CUJ-6	23.41
	CII-6	23.52
	CVI-6	6.55
	DJI-6	5.39
	ADI-6	6.44
	CGJ-6	29.37
	BRJ-6	19.91
	ZYI-6	1.03
	BOJ-6	20.41
	APJ-6	5.10
	CTJ-6	8.80
	ACI-6	16.43
	AOJ-6	38.42

<b>Treatment</b>	<b>Animal</b>	<b>Percent Consolidation</b>
Vaccinates	CCI-6	0.00
	ZSI-6	0.00
	ZQJ-6	0.00
	CHI-6	0.00
	ARI-6	0.00
	CXI-6	0.00
	BYI-6	0.00
	DII-6	0.00
	ABJ-6	0.21
	CJI-6	0.00
	AAJ-6	0.87
	ZZI-6	0.21
	BPJ-6	0.92
	AKJ-6	0.00
	CWI-6	0.00
	AEI-6	0.00
	AQI-6	0.00

**Table 3: Individual animal raw data for coughing**

Animal	Trt	Study Day 34		Study Day 35		Study Day 36		Study Day 37		Study Day 38		Study Day 39		Study Day 40		Study Day 41
		AM	PM	Pre-Chall	Post-Chall	AM	PM	AM								
ACI-6	Control Animals	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
ADI-6		0	0	0	0	0	0	0	2	0	0	2	2	0	0	0
ALJ-6		0	0	0	0	2	2	0	2	2	2	3	2	2	2	2
AOJ-6		0	0	0	0	0	2	2	2	0	0	0	2	0	2	0
APJ-6		0	0	0	0	2	0	2	2	2	2	0	0	0	2	2
BOJ-6		0	0	0	0	0	1	0	0	0	0	2	0	2	2	0
BRJ-6		0	0	0	0	0	0	0	0	2	2	0	2	2	0	0
CDI-6		0	0	0	0	0	2	0	0	0	0	0	2	0	2	0
CFJ-6		0	0	0	0	0	0	0	0	0	2	0	2	2	0	0
CGJ-6		0	0	0	0	2	0									
CII-6		0	0	0	0	0	0	0	0	0	2	3	3	3	0	3
CTJ-6		0	0	0	0	0	0	0	0	2	2	2	0	2	2	0
CUJ-6		0	0	0	0	2	0	0	0	2	0	3	0	0	0	1
CVI-6		0	0	0	0	0	2	0	2	0	2	0	2	2	2	2
DEJ-6		0	0	0	0	0	0	1	0	2	0	2	2	2	0	0
DFJ-6		0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
DJI-6		0	0	0	0	0	2	0	1	0	0	0	2	2	2	2
ZRJ-6		0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
ZTI-6		0	0	0	0	0	0	0	0	2	0	2	1	2	2	0
ZYI-6		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
AAJ-6	Vaccinated Animals	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
ABJ-6		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
AEI-6		0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
AKJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AQI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ARI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPJ-6		0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
BYI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CEJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CJI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CXI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DGJ-6		0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
DHJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DII-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZQJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZSI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZZI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Cough:**

0 – Absent

1 – Mild: Animal coughed once during clinical observation

2 – Moderate: Spontaneous/frequent coughing. Animal coughed 2X or more during clinical observation.

3 – Severe: Spontaneous with retching/Frequent coughing with retching. Animal had persistent and prolonged cough.

**Table 4: Individual animal raw data for fever ( $\geq 39.5^{\circ}\text{C}$ )**

Animal	Trt	Study Day 34	Study Day 35 Pre-Chall	Study Day 35 Post-Chall	Study Day 36	Study Day 37	Study Day 38	Study Day 39	Study Day 40	Study Day 41
ACI-6	Control Animals	38.4	38	37.4	39.2	38	38.1	38.9	38.1	38.2
ADI-6		38.4	38.5	37.8	38.9	38.2	39.7	39	37.6	38.1
ALJ-6		39	39	38.8	39.7	38.9	39.8	40.4	39	38.8
AOJ-6		38.6	38.3	38.4	38.6	38.5	39	38.6	38.8	38.7
APJ-6		38.9	37.8	38.7	38.6	37.6	39.3	39.3	38.6	38.7
BOJ-6		38.4	37.5	38	39	38.1	38.9	39.7	38.2	37.7
BRJ-6		38.7	38.4	37.1	39.3	38.8	39.9	38.6	37.8	37.8
CDI-6		39.2	38.8	38.8	40.2	38.7	38.7	39.4	38.5	38.7
CFJ-6		39.1	38.1	38.6	39.3	38.5	39	38.8	38.1	38.7
CGJ-6		39.1	38	37.8	37.5					
CII-6		39.3	38.8	39	40.1	39.1	38.9	39.5	38.9	39
CTJ-6		38.9	38.1	37.7	39.6	38.7	38.5	38.9	37.8	37.8
CUJ-6		39.1	38.6	38.4	39.9	38.9	40.1	40.5	38.6	38.7
CVI-6		39	38.4	38.7	40.4	39	39	38.7	38.5	38.8
DEJ-6		38.8	38.8	38.8	39.8	38.9	39	39.6	38.8	39
DFJ-6		39.2	39.3	39.1	40.2	39.3	39.2	39.1	38.8	39.1
DJI-6		38.8	38.5	38.5	39.5	38.4	38.4	38.9	38.5	38.7
ZRJ-6		38.1	38.5	38.6	39.4	39.1	40.2	39.1	38.7	38.8
ZTI-6		39.2	39.1	38.4	39.5	39.2	39.3	38.9	39.2	39.2
ZYI-6		38.6	38.2	37.8	39	38.2	38.5	38.5	37.7	37.7
AAJ-6	Vaccinated Animals	38.9	38.9	37.7	38.2	37.7	38.1	38.8	38.7	38.5
ABJ-6		38.6	37.9	37.8	38.2	37.9	38.6	38.4	37.5	38.3
AEI-6		38.5	37.9	37.9	37.5	37.8	38	38	38.1	38.1
AKJ-6		38.7	38.2	38.5	38.2	37.7	38.7	38.3	38.4	38.3
AQI-6		38.5	38.4	38.4	37.8	38.4	38	38.4	38.6	38.2
ARI-6		38.7	38.4	38.7	38	38.9	38.9	39.1	38.7	38.7
BPJ-6		38.3	38	38.1	38	38	38	38.2	37.9	38.4
BYI-6		38.9	38.7	38.7	38.1	39	38.2	38.6	38.5	38.5
CCI-6		39.2	38.9	38.7	38.4	39.6	38.6	39.1	38.6	38.9
CEJ-6		39	38.7	39	39.1	38.8	38.5	38.7	38	39.1
CHI-6		38.9	38.8	38.3	38.8	38.6	38.9	39.1	38.5	39.2
CJI-6		38.6	38.2	37.8	38.3	37.9	38	39.1	38.4	38.3
CWI-6		38.1	37.9	37.8	37.8	38.4	38.7	37.9	38.3	38.1
CXI-6		39	38.1	38.8	38.2	38.8	38.8	39.2	39	38.8
DGJ-6		38.2	39	38.9	38.3	39	38.6	38.6	38.6	38.7
DHJ-6		39	38.7	38	38.6	38.3	38.4	38.4	38.2	38.9
DII-6		38.8	38.7	38.5	38.2	38.1	38.4	38.3	38.4	38.8
ZQJ-6		38.9	39.3	38.6	38.6	39.6	39.3	39.1	38.8	38.7
ZSI-6		39.4	39	38.9	39.1	39.4	38.8	38.9	38.9	38
ZZI-6		38.6	38.4	37.4	37.8	38.4	38.5	38.2	37.9	38.1

**Table 5: Individual animal raw data for depression**

Animal	Trt	Study Day 34		Study Day 35		Study Day 36		Study Day 37		Study Day 38		Study Day 39		Study Day 40		Study Day 41	
		AM	PM	Pre-Chall	Post-Chall	AM	PM	AM									
ACI-6	Control Animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALJ-6		0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
AOJ-6		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
APJ-6		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
BOJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BRJ-6		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CDI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CFJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CGJ-6		0	0	0	0	0	0	1									
CII-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CTJ-6		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CUJ-6		0	0	0	0	0	1	0	0	0	2	0	2	0	0	0	0
CVI-6		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
DEJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DFJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DJI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZRJ-6		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
ZTI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZYI-6		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
AAJ-6	Vaccinated Animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ABJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AEI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AKJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AQI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ARI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BYI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CEJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CJI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CXI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DGJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DHJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DII-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZQJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZSI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZZI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Depression:**

0 – Absent

1 – Mild: Animal is slow to rise, lost interest in playing but still somewhat active

2 – Moderate: Animal is able to rise and move, but inactive other than to eat or drink

3 – Severe: Animal is recumbent, unable to rise, and refuses food and/or drink

**Table 6: Individual animal raw data for nasal discharge**

Animal	Trt	Study Day 34		Study Day 35		Study Day 36		Study Day 37		Study Day 38		Study Day 39		Study Day 40		Study Day 41
		AM	PM	Pre-Chall	Post-Chall	AM	PM	AM								
ACI-6	Control Animals	0	0	0	0	0	0	0	0	2	1	2	0	2	0	2
ADI-6		0	0	0	0	1	0	0	1	2	0	1	1	1	0	0
ALJ-6		0	0	0	0	1	0	0	2	2	2	2	2	2	0	0
AOJ-6		0	0	2	2	2	2	2	1	2	0	2	0	0	0	2
APJ-6		0	0	0	0	1	1	1	0	2	1	1	0	0	1	1
BOJ-6		0	0	0	0	0	0	0	1	2	1	3	0	1	2	0
BRJ-6		0	0	0	0	1	0	2	2	3	1	2	2	1	1	2
CDI-6		0	0	0	0	1	1	0	0	1	2	1	1	0	0	2
CFJ-6		0	0	0	0	0	0	0	0	1	2	1	0	0	0	2
CGJ-6		0	0	0	0	2	0									
CII-6		0	0	0	0	1	2	0	0	1	1	2	1	2	0	2
CTJ-6		0	0	0	0	0	0	0	0	3	2	3	0	2	0	0
CUJ-6		0	0	0	0	0	0	0	0	3	2	3	2	3	0	0
CVI-6		0	0	0	0	0	0	0	0	2	1	2	1	0	2	1
DEJ-6		0	0	0	0	1	2	0	1	3	2	3	0	1	0	0
DFJ-6		0	0	0	0	0	0	0	0	1	0	1	1	0	0	0
DJI-6		0	0	0	0	0	1	1	0	0	0	1	0	0	0	0
ZRJ-6		0	0	0	0	1	0	1	0	2	0	1	2	0	0	0
ZTI-6		0	0	1	0	1	0	0	1	1	2	1	2	1	0	1
ZYI-6		0	0	0	0	1	0	0	0	3	2	2	1	0	0	2
AAJ-6	Vaccinated Animals	0	0	0	1	0	2	0	0	1	0	1	0	0	0	0
ABJ-6		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AEI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AKJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AQI-6		1	0	1	0	0	0	0	0	1	0	1	0	1	0	0
ARI-6		0	0	0	0	0	1	1	0	0	0	1	0	0	0	2
BPJ-6		0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
BYI-6		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCI-6		0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
CEJ-6		0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
CHI-6		0	0	1	0	0	0	0	0	0	0	1	0	0	0	1
CJI-6		1	0	0	0	0	0	0	0	1	0	2	0	0	0	0
CWI-6		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CXI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DGJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DHJ-6		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DII-6		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
ZQJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZSI-6		0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
ZZI-6		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

**Nasal Discharge:**

0 – Absent (includes normal, moist nose)

1 – Mild: Serous (clear, watery) discharge, must be extending approximately ½ way down the nasal philtrum

2 – Moderate: Serous extending more than ½ way down the nasal philtrum, or evidence of mucopurulent discharge

3 – Severe: Mucopurulent discharge extending more than ½ way down the nasal philtrum, or bloody, or a combination of mucopurulent and bloody discharge

**Table 7: Individual animal raw data for labored breathing**

Animal	Trt	Study Day 34		Study Day 35		Study Day 36		Study Day 37		Study Day 38		Study Day 39		Study Day 40		Study Day 41
		AM	PM	Pre-Chall	Post-Chall	AM	PM	AM								
ACI-6	Control Animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALJ-6		0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
AOJ-6		0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
APJ-6		0	0	0	0	0	0	0	2	2	0	0	0	0	0	2
BOJ-6		0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
BRJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CDI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
CFJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CGJ-6		0	0	0	0	3	3									
CII-6		0	0	0	0	2	3	2	0	0	2	2	0	0	0	0
CTJ-6		0	0	0	0	2	2	0	0	2	0	0	0	0	0	0
CUJ-6		0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
CVI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEJ-6		0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
DFJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DJI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZRJ-6		0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
ZTI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
ZYI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AAJ-6	Vaccinated Animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AEI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AKJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AQI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ARI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BYI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CEJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CJI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CXI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DGJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DHJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DII-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZQJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZSI-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ZZI-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

**Labored breathing:**

0 – Absent

2 – Moderate: Small clicking, bubbling, or rattling sounds in the lung (Rales)

3 – Severe: Difficult or labored breathing; shortness of breath (Dyspnea)

**Table 8: Individual animal raw data for retching**

Animal	Trt	Study Day 34		Study Day 35		Study Day 36		Study Day 37		Study Day 38		Study Day 39		Study Day 40		Study Day 41
		AM	PM	Pre-Chall	Post-Chall	AM	PM	AM								
ACI-6	Control Animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADI-6		0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
ALJ-6		0	0	0	0	1	0	0	1	1	0	1	1	2	0	0
AOJ-6		0	0	0	0	2	0	1	0	0	0	0	0	0	1	0
APJ-6		0	0	0	0	2	0	1	1	1	1	0	0	0	0	0
BOJ-6		0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
BRJ-6		0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
CDI-6		0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
CFJ-6		0	0	0	0	0	0	0	0	0	1	0	2	1	0	0
CGJ-6		0	0	0	0	1	2									
CII-6		0	0	0	0	0	0	0	0	0	1	2	2	2	0	2
CTJ-6		0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
CUJ-6		0	0	0	0	0	0	0	0	1	0	2	0	0	0	0
CVI-6		0	0	0	0	0	2	0	1	0	0	0	1	0	0	0
DEJ-6		0	0	0	0	0	0	0	0	1	0	0	2	0	0	0
DFJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DJI-6		0	0	0	0	0	2	0	0	0	0	0	2	0	2	0
ZRJ-6		0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
ZTI-6		0	0	0	0	0	2	0	2	0	2	0	0	0	0	0
ZYI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AAJ-6	Vaccinated Animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AEI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AKJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AQI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ARI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BYI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CEJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CJI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CXI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DGJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DHJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DII-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZQJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZSI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZZI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Retching:** incoercible and unsuccessful attempts to vomit

0 – Absent

1 – Mild: Animal retches or vomits once briefly or occasionally

2 – Moderate: Animal retches or vomits for a prolonged period

3 – Severe: Animal retches or vomits multiple times for a prolonged period

**Table 9: Individual animal raw data for sneezing**

Animal	Trt	Study Day 34		Study Day 35		Study Day 36		Study Day 37		Study Day 38		Study Day 39		Study Day 40		Study Day 41
		AM	PM	Pre-Chall	Post-Chall	AM	PM	AM								
ACI-6	Control Animals	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
ADI-6		0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
ALJ-6		0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
AOJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BOJ-6		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BRJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
CDI-6		0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
CFJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CGJ-6		0	0	0	0	0	0	0								
CII-6		0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
CTJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CUJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CVI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DFJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZRJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZTI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZYI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AAJ-6	Vaccinated Animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AEI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AKJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AQI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ARI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BPJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BYI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CCI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CEJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CJI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CXI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DGJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DHJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DII-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZQJ-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZSI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZZI-6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Sneezing:**

- 0 – Absent
- 1 – Mild: Animal sneezed once or twice during observation
- 2 – Moderate: Animal sneezed repeatedly during clinical observation
- 3 – Severe: Animal presented paroxysmal sneeze

<b>Study Type</b>	Safety																				
<b>Pertaining to</b>	ALL																				
<b>Study Purpose</b>	To demonstrate safety under field conditions.																				
<b>Product Administration</b>	Two doses, administered subcutaneously, 3 weeks apart.																				
<b>Study Animals</b>	The study involved 364 dogs in total, with 118 dogs $\leq$ 8 weeks of age and 246 dogs $\geq$ 9 weeks of age from 15 sites in four different geographical locations. Three animals did not complete the study after the first vaccination. A total of 725 vaccinations were given.																				
<b>Challenge Description</b>	N/A.																				
<b>Interval observed after challenge</b>	<p>Immediate abnormal health events were assessed by the examining veterinarian or by a trained specialist for approximately 10-20 minutes post (each) vaccination.</p> <p>Dogs were observed for late abnormal health events primarily by their owners, or by Veterinarians or trained specialists. The observations were performed for 10 days post (each) vaccination.</p>																				
<b>Results</b>	<p>Table 1: Frequency Distributions of Immediate Reactions following Vaccination</p> <table border="1"> <thead> <tr> <th><b>Abnormal Health Events</b></th> <th><b>Total Number of Events</b></th> <th><b>% of Events</b></th> <th><b>Total Number Vaccinations</b></th> </tr> </thead> <tbody> <tr> <td>Injection Site Paraesthesia</td> <td>3</td> <td>0.4</td> <td>725</td> </tr> <tr> <td>Vocalization at Administration</td> <td>7</td> <td>1.0</td> <td>725</td> </tr> <tr> <td>Injection site Edema</td> <td>1</td> <td>0.1</td> <td>725</td> </tr> <tr> <td>Lethargy</td> <td>1</td> <td>0.1</td> <td>725</td> </tr> </tbody> </table>	<b>Abnormal Health Events</b>	<b>Total Number of Events</b>	<b>% of Events</b>	<b>Total Number Vaccinations</b>	Injection Site Paraesthesia	3	0.4	725	Vocalization at Administration	7	1.0	725	Injection site Edema	1	0.1	725	Lethargy	1	0.1	725
<b>Abnormal Health Events</b>	<b>Total Number of Events</b>	<b>% of Events</b>	<b>Total Number Vaccinations</b>																		
Injection Site Paraesthesia	3	0.4	725																		
Vocalization at Administration	7	1.0	725																		
Injection site Edema	1	0.1	725																		
Lethargy	1	0.1	725																		

Table 2: Frequency Distributions of Abnormal Health Events

<b>Abnormal Health Event</b>	<b>Number of Dogs</b>	<b>Total Number of Vaccinations</b>	<b>Percent (%)</b>
Adipsia <sup>d</sup>	1	725	0.14%
Anorexia <sup>b</sup>	2	725	0.28%
Change in blood protein	1	725	0.14%
Changes in blood phosphorous	1	725	0.14%
Circulatory shock <sup>c</sup>	1	725	0.14%
Convulsion <sup>d</sup>	1	725	0.14%
Dehydration <sup>b</sup>	1	725	0.14%
Diarrhea <sup>b</sup>	6	725	0.83%
Digestive tract disorder <sup>a</sup>	1	725	0.14%
Emesis <sup>b, d</sup>	6	725	0.83%
Epistaxis <sup>c</sup>	1	725	0.14%
External parasite	1	725	0.14%
Fracture <sup>c</sup>	1	725	0.14%
General pain <sup>c</sup>	1	725	0.14%
Hyperthermia	1	725	0.14%
Internal parasite	1	725	0.14%
Lameness <sup>c</sup>	1	725	0.14%
Lethargy <sup>b, d</sup>	3	725	0.41%
Muscle tremor <sup>d</sup>	1	725	0.14%
Polydipsia	1	725	0.14%
Pruritus	1	725	0.14%
Renal insufficiency <sup>b</sup>	1	725	0.14%
Skin lesion <sup>a</sup>	2	725	0.28%
Soft stool	1	725	0.14%
Umbilical hernia	1	725	0.14%

<sup>a</sup> No Other Symptoms

<sup>b</sup> Related to an episode of gastroenteritis

<sup>c</sup> Related to an episode of trauma (hit by car)

<sup>d</sup> Related to a witnessed but unknown ingestion while on a walk

All other dogs normal.

**USDA Approval Date**

April 28, 2017