Summary of Studies Supporting USDA Product Licensure

Establishment Name	Intervet Inc.
USDA Vet Biologics Establishment Number	165A
Product Code	12X1.20
True Name	Canine Adenovirus Type 2-Parainfluenza-Bordetella Bronchiseptica Vaccine, Modified Live Virus & Avirulent Live Culture
Tradename(s) / Distributor or Subsidiary (if different from manufacturer)	Intra-Trac 3 - No distributor specified Nobivac Intra Trac 3 ADT+ - Merck Animal Health Nobivac Intra Trac 3 ADT+ - No distributor specified Nobivac Intra-Trac 3 - Merck Animal Health Nobivac Intra-Trac 3 - No distributor specified
Date of Compilation Summary	April 22, 2019

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.

Study Type	Safety
Pertaining to	Canine Adenovirus Type-2 (CAV-2)
Study Purpose	To demonstrate the development of corneal opacity is not associated with the use of this product.
Product Administration	
Study Animals	
Challenge Description	
Interval observed after challenge	
Results	Study data were evaluated by USDA-APHIS prior to product licensure and met regulatory standards for acceptance at the time of submission. No data are published because this study was submitted to USDA-APHIS prior to January 1, 2007, and APHIS only requires publication of data submitted after that date.
USDA Approval Date	1980

<table>
<tr><td>Study Type</td><td>Efficacy</td></tr>
<tr><td>Pertaining to</td><td>Bordetella bronchiseptica (Bb)</td></tr>
<tr><td>Study Purpose</td><td>To demonstrate efficacy against Bb one year after vaccination</td></tr>
<tr><td>Product Administration</td><td>One dose administered by the intranasal route</td></tr>
<tr><td>Study Animals</td><td>30 dogs, 6-7 weeks of age at the time of vaccination; 15 vaccinates and 15 controls</td></tr>
<tr><td>Challenge Description</td><td>All dogs were challenged with Bb at approximately 14 months post-vaccination.</td></tr>
<tr><td>Interval observed after challenge</td><td>Dogs were observed daily for 21 days following challenge for clinical signs of disease. Nasal swabs for Bb isolation were collected at 6-time points during the post-challenge observation period.</td></tr>
<tr><td>Results</td><td>
<u>Clinical Signs</u>:
<table>
<tr><th>Treatment Group</th><th>Total # of Dogs</th><th># of Dogs Affected*</th></tr>
<tr><td>Controls</td><td>15</td><td>14</td></tr>
<tr><td>Vaccinates</td><td>15</td><td>5</td></tr>
</table>
* Dogs were considered affected following challenge if spontaneous coughing was observed on at least one day during the post-challenge observation period.

<u>Shedding Results</u>:
<table>
<tr><th>Treatment Group</th><th>Total # of Dogs</th><th># Positive for Shedding*</th></tr>
<tr><td>Controls</td><td>15</td><td>14</td></tr>
<tr><td>Vaccinates</td><td>15</td><td>5</td></tr>
</table>
* A dog was considered positive for shedding if Bb was isolated from nasal swabs collected at any time after challenge.
</td></tr>
<tr><td>USDA Approval Date</td><td>May 6, 2010</td></tr>
</table>

Daily Cough Scores Following Challenge with *B. bronchiseptica* in Dogs Vaccinated

Dog ID	Days post-challenge																								Total Score	Days Scored Coughing/Dog
	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
KFR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KJQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
KSQ	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2	5	4
KYR	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4	2
LPR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
LVQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	2	0	2	1	0	0	8	5
LXR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LYR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
OEQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	5	5
OGR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
OLR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	1
PCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
PJR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	1	1	0	2	0	8	6
PLQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
																						Grand Total			**39**	**30**

0 = None
1 = induced by gentle tracheal palpation
2 = Spontaneous/ Frequent coughing
3 = Spontaneous with retching/Frequent coughing with retching

Daily Cough Scores in Control Dogs Following Challenge with *B. bronchiseptica*

Dog ID	Days post-challenge																							Total Score	Days Scored Coughing/Dog
	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
KKQ	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	1	1	1	0	6	5
KQQ	0	0	0	0	0	0	0	0	0	2	2	0	0	0	1	1	1	1	2	1	1	1	1	0	14	11
KZR	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	2	0	1	0	1	1	1	1	1	11	9
LQQ	0	0	0	0	0	0	2	1	0	1	1	2	2	1	2	0	1	2	1	2	1	0	2	1	22	15
LSR	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	2	0	1	0	2	0	1	10	6
LZR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OAR	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	1	1	1	1	9	9
ODR	0	0	0	0	0	0	2	0	0	2	1	1	1	1	0	1	1	2	1	1	1	2	1	1	19	15
OIR	0	0	0	0	0	0	0	1	0	0	1	0	1	2	1	0	1	1	1	1	1	1	1	1	14	13
OWR	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	0	1	2	0	2	9	6
PDR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	3	3
PFQ	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	1	1	1	1	1	1	10	9
PGR	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1	0	1	0	0	0	0	0	5	4
PHR	0	0	0	0	0	0	2	0	0	2	0	0	2	2	3	3	2	2	3	2	2	3	3	3	34	14
PRQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	2	1	1	1	1	10	8
																								Grand Total	176	127
																								Median	10.5	

0 = None
1 = induced by gentle tracheal palpation
2 = Spontaneous/ Frequent coughing
3 = Spontaneous with retching/Frequent coughing with retching

Isolation of *B. bronchiseptica* Challenge Organisms in Nasal Swabs from Vaccinated Dogs

Dog ID	Day						Total days positive for shedding
	0	6	9	13	16	20	
KFR	-	-	-	-	-	-	0
KJQ	-	-	-	-	-	-	0
KSQ	-	-	-	-	-	-	0
KYR	-	+	-	-	-	-	1
LPR	-	-	-	-	-	-	0
LVQ	-	+	-	-	-	-	1
LXR	-	-	-	-	-	-	0
LYR	-	-	-	-	-	-	0
OEQ	-	c	-	-	-	-	0
OGR	-	+	-	-	-	-	1
OLR	-	-	-	-	-	-	0
PBQ	-	-	-	-	-	-	0
PCR	-	+	+	-	-	-	2
PJR	-	+	-	-	-	-	1
PLQ	-	-	-	-	-	-	0

c = contaminated sample

A dog was considered positive for shedding if Bb was isolated at more than one-time point.

Isolation of *B. bronchiseptica* Challenge Organisms in Nasal Swabs from Control Dogs

Dog ID	Day						Total days positive for shedding
	0	6	9	13	16	20	
KKQ	-	+	+	+	+	+	5
KQQ	-	-	-	+	+	+	3
KZR	-	+	+	+	+	+	5
LQQ	-	-	+	-	-	+	2
LSR	-	+	+	+	+	+	5
LZR	-	+	+	+	+	+	5
OAR	-	+	+	+	+	+	5
ODR	-	+	+	+	+	+	5
OIR	-	c	+	+	+	+	4
OWR	-	-	-	-	-	+	1
PDR	-	+	+	+	+	+	5
PFQ	-	+	+	+	+	+	5
PGR	-	-	-	+	+	+	3
PHR	-	+	+	+	+	+	5
PRQ	-	+	+	+	+	+	5

c = contaminated sample

A dog was considered positive for shedding if Bb was isolated at more than one-time point.

Study Type	Efficacy
Pertaining to	Canine Adenovirus Type-2 (CAV-2)
Study Purpose	To demonstrate efficacy against CAV-2
Product Administration	
Study Animals	Canine
Challenge Description	
Interval observed after challenge	
Results	Study data were evaluated by USDA-APHIS prior to product licensure and met regulatory standards for acceptance at the time of submission. No data are published because this study was submitted to USDA-APHIS prior to January 1, 2007, and APHIS only requires publication of data submitted after that date.
USDA Approval Date	May 16, 2003

Study Type	Efficacy
Pertaining to	Canine Parainfluenza (CPI)
Study Purpose	To demonstrate efficacy against CPI.
Product Administration	
Study Animals	Canine
Challenge Description	
Interval observed after challenge	
Results	Study data were evaluated by USDA-APHIS prior to product licensure and met regulatory standards for acceptance at the time of submission. No data are published because this study was submitted to USDA-APHIS prior to January 1, 2007, and APHIS only requires publication of data submitted after that date.
USDA Approval Date	May 16, 2003

Study Type	Efficacy
Pertaining to	*Bordetella bronchiseptica* (Bb)
Study Purpose	To demonstrate efficacy against Bb.
Product Administration	
Study Animals	Canine
Challenge Description	
Interval observed after challenge	
Results	Study data were evaluated by USDA-APHIS prior to product licensure and met regulatory standards for acceptance at the time of submission. No data are published because this study was submitted to USDA-APHIS prior to January 1, 2007, and APHIS only requires publication of data submitted after that date.
USDA Approval Date	May 16, 2003

Study Type	Safety
Pertaining to	Canine Adenovirus Type-2 (CAV-2)
Study Purpose	To demonstrate the development of corneal opacity is not associated with the use of this product.
Product Administration	
Study Animals	
Challenge Description	
Interval observed after challenge	
Results	Study data were evaluated by USDA-APHIS prior to product licensure and met regulatory standards for acceptance at the time of submission. No data are published because this study was submitted to USDA-APHIS prior to January 1, 2007, and APHIS only requires publication of data submitted after that date.
USDA Approval Date	1980

Study Type	Safety
Pertaining to	ALL
Study Purpose	To demonstrate safety under field conditions.
Product Administration	
Study Animals	Canine
Challenge Description	
Interval observed after challenge	
Results	Study data were evaluated by USDA-APHIS prior to product licensure and met regulatory standards for acceptance at the time of submission. No data are published because this study was submitted to USDA-APHIS prior to January 1, 2007, and APHIS only requires publication of data submitted after that date.
USDA Approval Date	August 14, 2003