

ชุดตรวจสารพันธุกรรมในสุนัข

BRIA

สำหรับตรวจพยาธิในเม็ดเลือด

 *Anaplasma* และ *Ehrlichia*

ได้ใบครั้งเดียว

2 in 1



pluslife

✓ง่าย ✓รวดเร็ว ✓สะดวก

✓ผลแม่นยำ เทียบเท่า PCR

ติดต่อ

BRIA-VET & PET 080-1656-456, 02-1066-999 ต่อ 711

Prevalence of canine vector-borne disease in Bangkok, Thailand during rainy season of 2024 and the assessment of canine Ehrlichiosis detection by microscopy and Pluslife compared to quantitative polymerase chain reaction

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Table-1. Prevalence of *Ehrlichia* spp., *Babesia* spp., *Hepatozoon canis*, *Anaplasma* spp., *Dirofilaria immitis* and *Brugia malayi* using microscope in 134 whole blood dog samples examined in Nong Chock and Ladkrabang, Bangkok, Thailand.

Pathogens	N	%	CI (95%)
Overall			
<i>Ehrlichia</i> spp	35	26.12	18.92-34.41
<i>Babesia</i> spp	6	4.48	1.66-9.49
<i>Hepatozoon canis</i>	9	6.72	3.12-12.37
<i>Anaplasma</i> spp	1	0.75	0.02-4.09
<i>Dirofilaria immitis</i>	5	3.73	1.22-8.49
<i>Brugia malayi</i>	5	3.73	1.22-8.49
Single infection			
<i>Ehrlichia</i> spp	30	22.38	15.64-30.39
<i>Babesia</i> spp	3	2.24	0.46-6.40
<i>Hepatozoon canis</i>	7	5.22	2.13-10.47
<i>Anaplasma</i> spp	1	0.75	0.02-4.09
<i>Dirofilaria immitis</i>	2	1.49	0.18-5.29
<i>Brugia malayi</i>	1	0.75	0.02-4.09
Double infection			
<i>Ehrlichia</i> spp. + <i>Babesia</i> spp.	2	1.49	0.18-5.29
<i>Ehrlichia</i> spp. + <i>Hepatozoon canis</i>	1	0.75	0.02-4.09
<i>Ehrlichia</i> spp. + <i>Brugia malayi</i>	1	0.75	0.02-4.09
<i>Dirofilaria immitis</i> + <i>Brugia malayi</i>	3	2.24	0.46-6.40
Triple infection			
<i>Ehrlichia</i> spp. + <i>Babesia</i> spp. + <i>Hepatozoon canis</i>	1	0.75	0.02-4.09

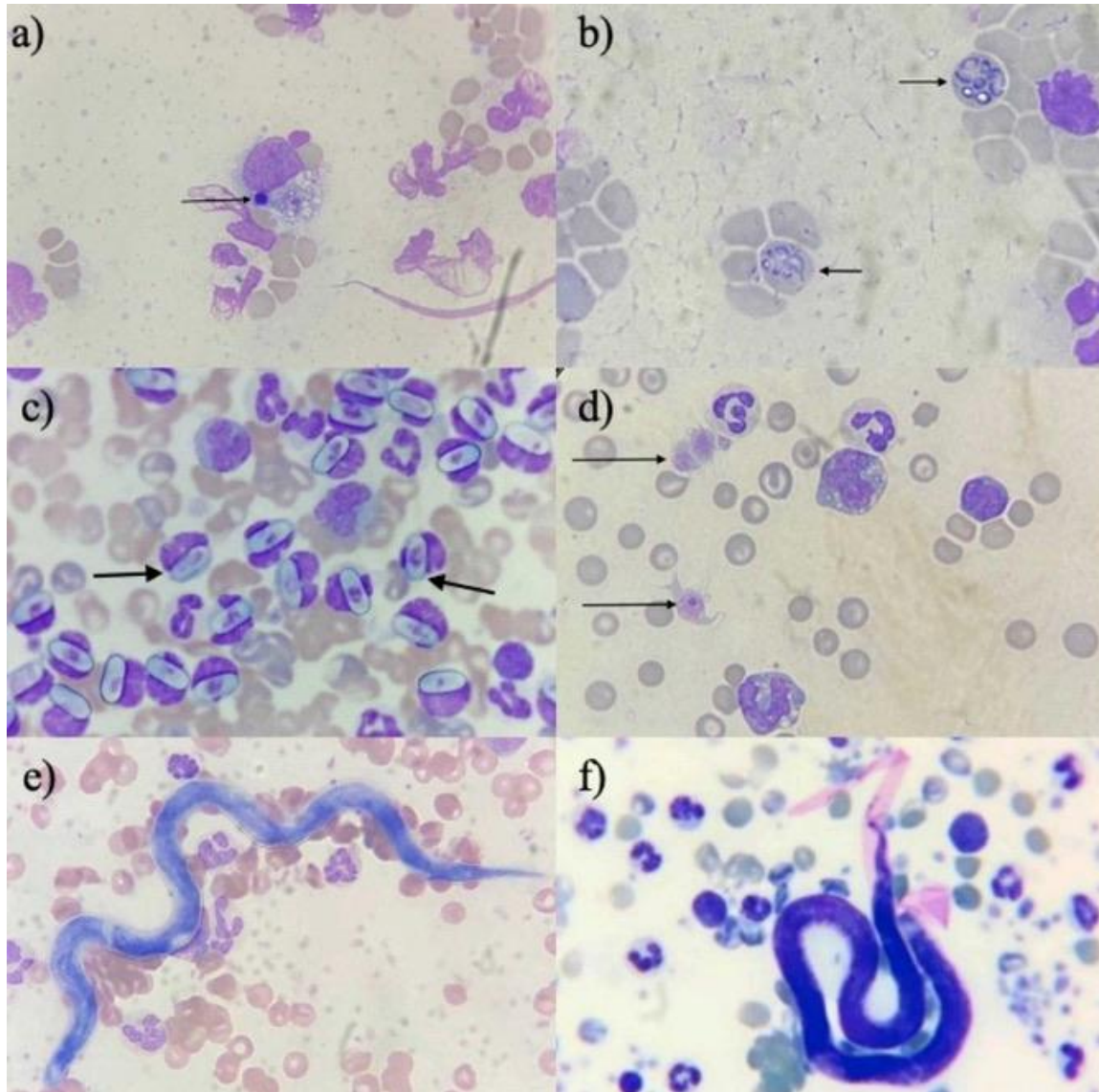


Figure-1. Blood pathogens in stained blood smear. (a) *Ehrlichia* spp. in a monocyte, (b) *Babesia* spp. in a red blood cell, (c) *Hepatozoon canis* in a neutrophil, (d) *Anaplasma* spp. in platelets, (e) *Dirofilaria immitis* and (f) *Brugia* spp.

Table-2. The results of microscopy to *Ehrlichia* spp. detection compared quantitative polymerase chain reaction (qPCR) in 134 whole blood dog samples examined in Nong Chock and Ladkrabang, Bangkok, Thailand.

Samples Examined in Nong Chock and Ladkrabang, Bangkok, Thailand.																			
No	Microscope		qPCR	No	Microscope		qPCR	No	Microscope		qPCR	No	Microscope		qPCR				
	result	result	Ct		result	result	Ct		result	result	Ct		result	result	Ct				
1	negative	positive	32.57	41	negative	negative	-	81	positive	positive	29.83	121	positive	positive	33.30				
2	positive	positive	23.49	42	negative	negative	-	82	positive	positive	30.24	122	positive	positive	31.99				
3	positive	negative	-	43	positive	negative	-	83	positive	positive	29.96	123	negative	positive	33.18				
4	positive	positive	26.15	44	negative	negative	-	84	positive	positive	30.89	124	positive	positive	33.11				
5	positive	positive	28.39	45	negative	negative	-	85	positive	positive	30.61	125	negative	negative	-				
6	negative	negative	-	46	negative	negative	-	86	positive	positive	31.39	126	positive	negative	-				
7	positive	positive	26.74	47	negative	negative	-	87	positive	positive	31.33	127	negative	negative	-				
8	negative	negative	-	48	negative	negative	-	88	negative	positive	31.57	128	negative	negative	-				
9	negative	negative	-	49	negative	negative	-	89	negative	positive	31.07	129	negative	positive	36.53				
10	positive	positive	27.36	50	negative	negative	-	90	negative	positive	31.32	130	negative	negative	-				
11	negative	negative	-	51	negative	negative	-	91	negative	positive	30.74	131	negative	negative	-				
12	positive	positive	26.97	52	negative	negative	-	92	negative	positive	32.43	132	negative	positive	37.37				
13	positive	positive	23.73	53	negative	negative	-	93	negative	positive	32.63	133	positive	positive	26.57				
14	positive	positive	23.87	54	negative	negative	-	94	negative	positive	32.10	134	negative	negative	-				
15	positive	positive	30.35	55	negative	negative	-	95	negative	positive	32.04								
16	positive	positive	20.76	56	negative	negative	-	96	positive	positive	27.17								
17	negative	negative	-	57	negative	negative	-	97	negative	positive	34.54								
18	positive	positive	31.84	58	positive	negative	-	98	negative	positive	32.94								
19	negative	positive	34.08	59	positive	negative	-	99	negative	positive	35.08								
20	negative	negative	-	60	negative	negative	-	100	positive	positive	27.49								
21	negative	positive	36.67	61	negative	negative	-	101	negative	positive	32.50								
22	negative	negative	-	62	negative	negative	-	102	negative	positive	34.51								
23	negative	positive	35.00	63	negative	negative	-	103	negative	positive	30.80								
24	negative	negative	-	64	negative	negative	-	104	negative	positive	31.45								
25	negative	negative	-	65	negative	negative	-	105	positive	positive	29.05								
26	negative	negative	-	66	negative	negative	-	106	negative	positive	39.45								
27	negative	positive	37.54	67	negative	negative	-	107	negative	positive	32.71								
28	negative	negative	-	68	negative	negative	-	108	positive	negative	-								
29	negative	negative	-	69	negative	negative	-	109	positive	positive	29.47								
30	negative	negative	-	70	negative	negative	-	110	negative	positive	32.67								
31	positive	positive	27.29	71	negative	negative	-	111	negative	positive	35.02								
32	negative	negative	-	72	negative	negative	-	112	negative	positive	34.66								
33	negative	negative	-	73	positive	positive	30.35	113	positive	positive	32.58								
34	negative	negative	-	74	negative	positive	38.85	114	positive	positive	30.45								
35	negative	negative	-	75	negative	negative	-	115	negative	positive	37.49								
36	positive	negative	-	76	negative	negative	-	116	positive	positive	34.27								
37	positive	negative	-	77	negative	positive	34.13	117	negative	positive	39.72								
38	negative	negative	-	78	positive	positive	25.26	118	positive	positive	28.79								
39	negative	negative	-	79	positive	positive	20.58	119	negative	positive	34.66								
40	negative	negative	-	80	negative	negative	-	120	positive	positive	32.72								

Table-3. Performance of microscopy for *Ehrlichia* spp. detection compared quantitative polymerase chain reaction (qPCR) in 134 whole blood dog samples examined in Nong Chock and Ladkrabang, Bangkok, Thailand.

Microscopy	qPCR		Performance
	Positive	Negative	
Positive	35	8	-
Negative	33	58	-
Sensitivity (%)	-	-	<u>51.47</u>
Specificity (%)	-	-	<u>87.88</u>
Accuracy (%)	-	-	69.40
Precision (%)	-	-	81.39



Table-1. The results of genomic detection against Canine ehrlichiosis using RNase hybridization-assisted amplification (RHAM) technology compared quantitative polymerase chain reaction (qPCR)

No	RHAM		qPCR		No	RHAM		qPCR		No	RHAM		qPCR		No	RHAM		qPCR	
	result	result	Ct			result	result	Ct			result	result	Ct			result	result	Ct	
1	positive	positive	32.57	41	negative	negative	-		81	positive	positive	29.83	121	positive	positive	33.30			
2	positive	positive	23.49	42	negative	negative	-		82	positive	positive	30.24	122	positive	positive	31.99			
3	negative	negative	-	43	negative	negative	-		83	positive	positive	29.96	123	negative	positive	33.18			
4	positive	positive	26.15	44	negative	negative	-		84	positive	positive	30.89	124	positive	positive	33.11			
5	positive	positive	28.39	45	negative	negative	-		85	positive	positive	30.61	125	negative	negative	-			
6	negative	negative	-	46	negative	negative	-		86	positive	positive	31.39	126	negative	negative	-			
7	positive	positive	26.74	47	negative	negative	-		87	positive	positive	31.33	127	negative	negative	-			
8	negative	negative	-	48	negative	negative	-		88	positive	positive	31.57	128	negative	negative	-			
9	negative	negative	-	49	negative	negative	-		89	positive	positive	31.07	129	positive	positive	36.53			
10	positive	positive	27.36	50	negative	negative	-		90	positive	positive	31.32	130	negative	negative	-			
11	negative	negative	-	51	negative	negative	-		91	positive	positive	30.74	131	negative	negative	-			
12	positive	positive	26.97	52	negative	negative	-		92	positive	positive	32.43	132	positive	positive	37.37			
13	positive	positive	23.73	53	negative	negative	-		93	positive	positive	32.63	133	positive	positive	26.57			
14	positive	positive	23.87	54	negative	negative	-		94	positive	positive	32.10	134	negative	negative	-			
15	positive	positive	30.35	55	negative	negative	-		95	positive	positive	32.04							
16	positive	positive	20.76	56	negative	negative	-		96	positive	positive	27.17							
17	negative	negative	-	57	negative	negative	-		97	positive	positive	34.54							
18	positive	positive	31.84	58	negative	negative	-		98	positive	positive	32.94							
19	negative	positive	34.08	59	negative	negative	-		99	positive	positive	35.08							
20	negative	negative	-	60	negative	negative	-		100	positive	positive	27.49							
21	negative	positive	36.67	61	negative	negative	-		101	positive	positive	32.50							
22	negative	negative	-	62	negative	negative	-		102	positive	positive	34.51							
23	positive	positive	35.00	63	negative	negative	-		103	positive	positive	30.80							
24	negative	negative	-	64	negative	negative	-		104	positive	positive	31.45							
25	negative	negative	-	65	negative	negative	-		105	positive	positive	29.05							
26	negative	negative	-	66	negative	negative	-		106	positive	positive	39.45							
27	negative	positive	37.54	67	negative	negative	-		107	positive	positive	32.71							
28	negative	negative	-	68	negative	negative	-		108	positive	negative	-							
29	negative	negative	-	69	negative	negative	-		109	positive	positive	29.47							
30	negative	negative	-	70	negative	negative	-		110	positive	positive	32.67							
31	positive	positive	27.29	71	negative	negative	-		111	positive	positive	35.02							
32	negative	negative	-	72	negative	negative	-		112	positive	positive	34.66							
33	negative	negative	-	73	positive	positive	30.35		113	positive	positive	32.58							
34	negative	negative	-	74	negative	positive	38.85		114	positive	positive	30.45							
35	negative	negative	-	75	negative	negative	-		115	positive	positive	37.49							
36	negative	negative	-	76	negative	negative	-		116	positive	positive	34.27							
37	negative	negative	-	77	negative	positive	34.13		117	positive	positive	39.72							
38	negative	negative	-	78	positive	positive	25.26		118	positive	positive	28.79							
39	negative	negative	-	79	positive	positive	20.58		119	positive	positive	34.66							
40	negative	negative	-	80	negative	negative	-		120	positive	positive	32.72							

Ct: cycle threshold; positive: detected nucleic acid; negative: undetected nucleic acid

Table-2 Performance of genomic detection against canine Ehrlichiosis using RNase hybridization-assisted amplification (RHAM) Ehrlichiosis test kit compared to quantitative polymerase chain reaction (qPCR).

RHAM test kit	qPCR		Performance
	Positive	Negative	
Positive	62	1	-
Negative	6	65	-
Sensitivity (%)	-	-	<u>91.18</u>
Specificity (%)	-	-	<u>98.48</u>
Accuracy (%)	-	-	94.78
Precision (%)	-	-	98.41



Discussion

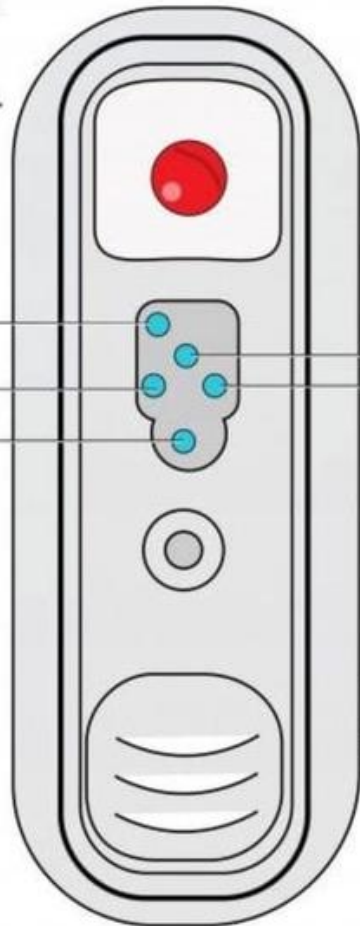
- **6 false positive**

- Ct 34.08
- Ct 36.67
- Ct 37.54
- Ct 38.85
- Ct 34.13
- Ct 33.18

- **Suspect**

- Low titer of pathogen
- Tested volume
 - Pluslife 50 ul
 - qPCR 300 ul
- Puriification in ectraction of qPCR



No	Name		Ab test kit	qPCR
1	 Snap 4Dx Test. This test screens for ehrlichiosis, anaplasmosis, Lyme disease, and heartworm.		+	-
2			+	-
3			+	-
4			+	37.54
5		24	+	-
6			+	-
7			+	-
8			+	30.35
9			+	38.85
10			+	-
11			+	-
12			+	33.18
13			+	33.11
14			+	-
15			+	-
16			+	-
17			+	-
18			+	36.53
19			+	-
20	Snap 2 E		+	-
21	Snap 1 A		-	37.37

Conclusion

- Pluslife Ehrlichia Nucleic Acid Test Card provide **rapid, accuracy (high sensitivity and specificity)** and convenient.
- Pluslife **comparable qPCR**
- Useful:
 - **Accurate diagnosis**
 - **Confirm during/after treatment**

