

## REFERENCES

1. Dondorp A, Nosten F, Stepniewska K, Day N, White N. Artesunate versus quinine for treatment of severe *falciparum* malaria: a randomised trial. *Lancet* 366, pp.717–25 (2005).
2. Dondorp AM, Fanello CI, Hendriksen IC *et al.* Artesunate versus quinine in the treatment of severe *falciparum* malaria in African children (AQUAMAT): an open-label, randomised trial. *Lancet* 376, pp.1647–57 (2010).
3. Severe *falciparum* malaria. World Health Organization, Communicable Diseases Cluster. *Trans. R. Soc. Trop. Med. Hyg.* 94(Suppl. 1),S1–S90 (2000).
4. Idro R, Jenkins NE, Newton CR. Pathogenesis, clinical features, and neurological outcome of cerebral malaria. *Lancet Neurol.* 4, pp.827–40 (2005).
5. WHO. *Guidelines for the Treatment of Malaria (2nd Edition)*. The WHO, Geneva, Switzerland (2010).
6. Maude RJ, Beare NA, Abu Sayeed A *et al.* The spectrum of retinopathy in adults with *Plasmodium falciparum* malaria. *Trans. R. Soc. Trop. Med. Hyg.* 103, pp.665–671 (2009).
7. Beare NA, Lewallen S, Taylor TE, Molyneux ME. Redefining cerebral malaria by including malaria retinopathy. *Future Microbiol.* 6, pp.349–55 (2011).
8. MacPherson GG, Warrell MJ, White NJ, Looareesuwan S, Warrell DA. Human cerebral malaria. A quantitative ultrastructural analysis of parasitized erythrocyte sequestration. *Am. J. Pathol.* 119, pp.385–1 (1985).
9. Dorovini-Zis K, Schmidt K, Huynh H *et al.* The neuropathology of fatal cerebral malaria in malawian children. *Am. J. Pathol.* 178, pp.2146–58 (2011).
10. Grau, G. E., and J. N. Lou. 1995. Experimental cerebral malaria: possible new mechanisms in the TNF-induced microvascular pathology. *Soz. Praventivmed.* 40, pp.50-7.
11. Hansen, D. S., N. J. Bernard, C. Q. Nie, and L. Schofield. 2007. *NK cells stimulate recruitment of CXCR3+ T cells to the brain during Plasmodium berghei-mediated cerebral malaria.* *J. Immunol.* 178, pp.5779-88.
12. Luster, A. D., R. Alon, and U. H. von Andrian. 2005. Immune cell migration in inflammation: present and future therapeutic targets. *Nat. Immunol.* 6, pp.1182-90.
13. Karapelou, J.; 1987, *Parasite Life Cycles*, Springer Verlag, New York.

14. Armah HB, et al. (2007) Cerebrospinal fluid and serum biomarkers of cerebral malaria mortality in Ghanaian children. *Malar J* 6:147 (abstr).
15. Hansen DS, Bernard NJ, Nie CQ, Schofield L (2007) NK cells stimulate recruitment of CXCR3 T cells to the brain during *Plasmodium berghei*-mediated cerebral malaria. *J Immunol* 178, pp.5779–88.
16. John CC, Opika-Opoka R, Byarugaba J, Idro R, Boivin MJ (2006) Low levels of RANTES are associated with mortality in children with cerebral malaria. *J Infect Dis* 194, pp.837–5.
17. Sarfo BY, et al. (2004) The cerebral malaria-associated expression of RANTES, CCR3, and CCR5 in post-mortem tissue samples. *Ann Trop Med Parasitol* 98, pp.297–3
18. Feng, P. C., et al. "Pharmacological screening of some West Indian medicinal plants." *J. Pharm. Pharmacol.* 1962; 14, pp. 556-61.
19. Carbajal, D., et al. "Pharmacological screening of plant decoctions commonly used in Cuban folk medicine." *J. Ethnopharmacol.* 1991; 33(1/2), pp. 21-4.
20. Sundarrao, K., et al. "Preliminary screening of antibacterial and antitumor activities of Papua New Guinean native medicinal plants." *Int. J. Pharmacog.* 1993; 31(1), pp. 3-6.
21. Wu, F. E., et al. "Additional bioactive acetogenins, annonmutacin and (2,4-trans and cis)-10R-annonacin-A-ones, from the leaves of *Annona muricata*." *J. Nat. Prod.* 1995; 58(9), pp. 1430-37.



KOMISI ETIK PENELITIAN KESEHATAN (KEPK)  
FAKULTAS KEDOKTERAN UNIVERSITAS DIPONEGORO  
DAN RSUP dr KARIADI SEMARANG  
Sekretariat : Kantor Dekanat FK Undip Lt.3  
Jl. Dr. Soetomo 18. Semarang  
Telp/Fax. 024-8318350



**ETHICAL CLEARANCE**  
**No. 426/EC/FK-RSDK/2015**

Komisi Etik Penelitian Kesehatan Fakultas Kedokteran Universitas Diponegoro-RSUP. Dr. Kariadi Semarang, setelah membaca dan menelaah Usulan Penelitian dengan judul :

**PENGARUH ANNONA MURICATA TERHADAP BIOMARKER RESPONS IMUN  
(Studi pada Mencit Swiss Model Experimental Cerebral Malaria)**

Peneliti Utama : **Dr. dr. RA. Kisdjamiatun RMD, MSc**

Anggota :  
1. Achmad Asnawi, S.KM  
2. Walid Faraj A. Naamat  
3. Husen Mohamed Faraj Albakush  
4. Khalid Mohamed Abulgani Abdulaziz  
5. Mohamde M. Y. Gadalla  
6. Sumia M. Ali Matug

Penelitian : Dilaksanakan di Laboratorium Parasitologi  
Universitas Diponegoro Semarang

Setuju untuk dilaksanakan, dengan memperhatikan prinsip-prinsip yang dinyatakan dalam Deklarasi Helsinki 1975, yang diamended di Seoul 2008 dan Pedoman Nasional Etik Penelitian Kesehatan (PNEPK) Departemen Kesehatan RI 2011

Pada laporan akhir peneliti harus melampirkan cara pemeliharaan & dekapitasi hewan coba dan melaporkan ke KEPK bahwa penelitian sudah selesai dilampiri Abstrak Penelitian.

Semarang, 01 JUN 2015

Komis Etik Penelitian Kesehatan  
Fakultas Kedokteran Undip-RS. Dr. Kariadi  
Ketua,



**Prof. Dr. dr. Suprihati, M.Sc, Sp.THT-KL(K)**  
NIP.19500621 197703 2 001

**PEMERINTAH KOTA BANDUNG**

DINAS PERTANIAN DAN KETAHANAN PANGAN

Jalan Arjuna No. 45 Telp. (022) 6015102 Fax. 6015975 Bandung 40174

---

SURAT KETERANGAN KESEHATAN HEWAN ANIMAL HEALTH CERTIFICATE

No. 524.3/ z.8 -Dispertapa/2015

Yang bertanda tangan di bawah ini Drh. Ermariah Dokter Hewan Dinas Pertanian dan Ketahanan Pangan Kota Bandung The undersigned Veterinarian nerangkan Here by certify

Bahwa pada hari ini Rabu Tanggal 27 Mei 2015 That on this day date

Telah memeriksa hewan seperti disebut di bawah : Examined the following animal (s)

	Jenis Hewan Species	Bangsa Breed	Jumlah Total	Jenis Kelamin Sex		Umur Age	Tanda-tanda Special sign	Ket Remark
				Jantan Male	Betina Female			
I.	Mencil	Swis Webter	80 Ekor	-	80 Ekor	9 Minggu	Putih	Sehat

## CERTIFICATE OF ANALYSIS

Product name	: Soursop Extract Powder
Scientific name	: Annonae muricatae Folium.
Solvent	: -Et.. aac1 70 %
Manufacturing date	: April 20, 2015
Extract ratio	: 5 : 1
Filler	: Maltodextrine

ITEMS	RESULT	SPECIFICATION
<b>Characteristic</b>		
Appearance	Complies	Brown powder
Odor	Complies	Characteristic
<b>Physico-chemical</b>		
Moisture content	4.69 %	Max 10 %
Saponin/content	1.62 %	Positive
Antioxidant Activity	10.54 mg/ml	Positive
<b>Microbiological</b>		
T-total Plate Cm.ut	2.4 x HP / g	Ma. 1x 10 <sup>4</sup> / g
Mold	2.0 x 10 <sup>1</sup> / g	Max 1x 10 <sup>3</sup> / g
Yeast	< 1.0 x 10 <sup>1</sup> / g	Max 1x 10 <sup>3</sup> / g
Escherichia coli	Negative / g	Negative / g
Pseudomonas aeruginosa	Negative / g	Negative / g
Salmonella sp	Negative / g	Negative / g
Staphylococcus aureus	Negative / g	Negative / g

**Conclusion : This batch complies with the specification**

Date : May 18, 2015

QC Department : Dra. Ernawati, Apt

PT SIDO MUNCUL

Marketing office :  
 Jl. Cipete Raya no. 1  
 Jakarta 14101, Indonesia  
 @21)Jkt33\_5.

Factory: :  
 Jl. Soekarno HaKm 28  
 Keping, Semarang - Indonesia  
 Tel. (62) 6580 559, (62 298) 523 515 (Hunting)

fIt /r 1/ 11 ,!  
lr 11< . d / { / ; f 1 / '

Fa 2.1)65\_ 6522 \_ - aX- 62 24) 6580 m. (62 298) 523 509  
j!-mail : mark) 'ng@Sidol!!J undil.co...-e-mail : simuncul@indosat .net.id

<http://www.sidomuncul .com>

M E D I C I N E I N D U S T R Y

HASIL PEMERIKSAAN CXCL9, 27 Juli 2015

	1	2	3	4	5	6	7	8	9	10	11	12
A	Std. 2000	Std. 2000	K(-) 1 LPS 302.17	p1. 3 27.070	K(+) 1A 12.870	K(+) 38 199.12	P4. 38 157.72					
8	Std. 1000	Std. 1000	K(-) 2 343.45	P1. 4 211.29	K(+) 2A 11.316	K(+) 48 217.40	P4. 48 113.53					
C	Std. 500	Std. 500	K(-) 3 281.69	P1. 5 56.179	P3. 1A 110.16	P3. 18 454.93	P4. 58 257.78					
D	Std. 250	Std. 250	K(-) 4 257.78	P2. 1 304.85	P3. 2A 239.29	P3. 28 407.07	c., ntrol 227.01 ( Range 174 – ?89 pg/ml )					
E	Std. 125	Std. 125	K(-) 5 185.26	P2. 2 764.19	P3. 3A 247.20	P3. 38 62.737						
F	Std. 62.5	Std. 62.5	K(-) 6 500.48	P2. 3 28.666	P4. 1A 156.86	P3. 48 93.396						
G	Std. 31.3	Std. 31.3	P1. 1 85.893	P2. 4 89.224	K(+) 18 52.911	P4. 18 35.884						
H	Std. 0	Std. 0	P1. 2 262.19	P2. 5 331.75	K(+) 28 100.92	P4. 28 54.544						

# KC4

Protocol Name: G:\KC4 3...v 4\CXCL\GXCL9 moiflatnecprl

Data Name: C:\KC.4 3.0...ev 4\CXCL\cxc!9 rnoharnecpla

Reading Date/Time: 07/27/2015 13:12:07

Repmi Daternrne: 07/27/2015 13:18:36

## Concentrations

		S	4	e	I	12
A	2003.3	133i	3a::i2"	070	12:370	133.12 1S7.72
B	3739	100i.3	343 4S	2i 1.29	ii.3i€	2i7.4iJ ii3.53
C	Si0.7€	sa1_02	2:31 6:3	56 179	ñD.ñS	.dS.0.9! 757.i:?
D	251.0	257J:j	1LJ4.=35	24:3.22-	7.:7	227.Jji
E	1€..df	ii:i.43	i:3S.2ii	t6*4.i3	247 .a	62j3?
F	SSi€	€Q.27S	500.4:3	2:?,€66	i-6.:35	93.336
G	3i.ni:::	7.:4:-s	=S:333	39.124	s2=i1 i	3S i3:::ll
H	2.i77D	23150	33i.7S	-HJ0.32	S-4.544	



Protocol Name: C:\<C4 3.-.v 4\CXCL\CXCL9 mohameclprt

Data Name: C:\KC4 3.0.\_.ev 4\CXCL\cxcl9 moh3rn>?.cl.p!?:

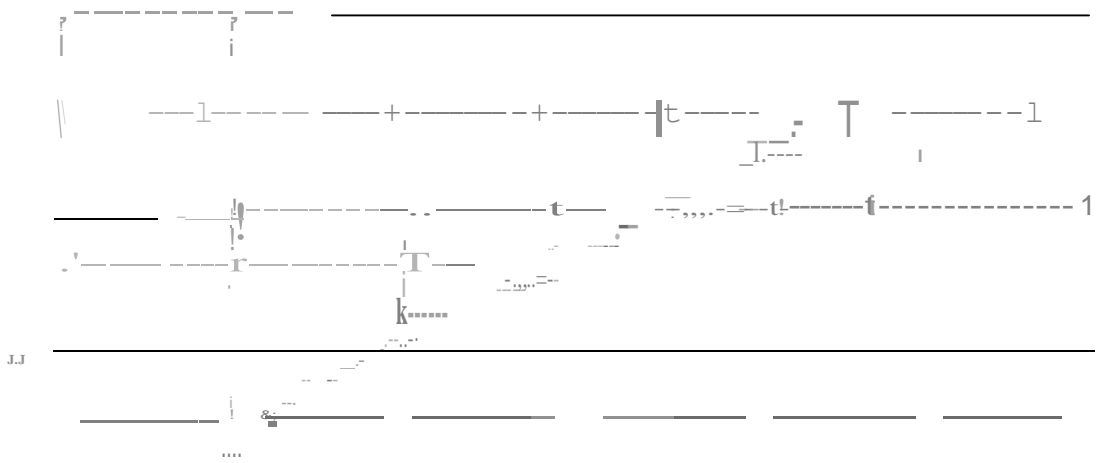
Reading Date/Time: 0712712015 -13:-12:07

Report Date/Time: 07 27 2015 13:18:36

Delta OD

	2	3	4	::	B	I	i2
A	2.020	2.D1S	U.39=	fJ.OS?:	U.DSU	G.:273	iJ.2;S
B	iiUS	ii:?:	0.436	a.2:37	D.04'3	iJ.234	iJ.173
G	U.613	D6^:1	fj3S7	LI.iLI4	IJ.iSS	aSS:3	0.34iJ
I:	IJ3^s:	D.74D	.....	D3S3	D.31:3	DE.f16	C.JDS
E	a.1::3	U.2S7	o.2'3Z	0.224	u.i i2		
F	U. iUS	D.60?	1.1170	0.149	f1.102		
			LI.ir'JU	0.073			

STANDARD CURVE



Faerr.r tl;1 v=fl-d)(l+(:;t'l..b)+r  
 =G.JJP< :;''U.kii ;S c-i.JHE-!-O!H ctsJ4/j:1  
 I':HeJ ->+D:EI Vi-D J:m :;::;

Prntocoi Name: C:\<C4 L..v 4\CX.CUCXCL9 rnoharnecLpcl

Data Name: C:\KC4 3.0...ev 4\CXCL\cxcl9 mohamed.pla

Reading Dateffirne: 07/2?f20.15 LU2:07

Repoi1Datefnme: on2112015 -13: .rn:3fi

Concentrations

	2	S	<l	h	B	7	li	il	ii	i2
2D=J3.S	13?+...	3!E.i7	!7.D70	1.2.870	t39.i2	157.72				
?:37.99	i00i.3	3!i3.4S	2i 1.29	i3i6	2i7 4U	il3.53				
.SIEL7e	507.02	281 .S3	5S.ff	!i0.1S	80:.,;9	2S7.i:?				
---	25!?.tj	257.7=3	3D4.:35	2:;?.2:3	.407.C!	227.Di				
E	1 S.LU	< i9.43	i:3S-26"	164.i	247.:!0	S2.737				
f	6i .3i6	60.275	SUjL4=	23.€66	iS6 .86	33.3:3				
Q	31.068	79.465	85.893	89.724	52. =ii ii	3:7 8=1				
H	2.1770	2.9190	262.19	331.75	UD32	S4.544				

