

B

BJS 201905

1

\ Ø# ?δ° ¶O æ]5 i > B ,#â(8ÇBa#{ ° Ø# œ#â(8ÇBaCXBaCXBa. Aæ Ø# ~
\ Ø# F2+X ½z * 1B3 £ É^ 8Æ B œ8Æ B2Æ B0 ^ (6, Ç ^ =LO "d Ì Ç f æ]5
i > B ,#{ ° Aæ ~

2

B g]5 i > B +X [G²,+bG•"d\$æâ > "4ÿ\$' 8 »Lc/° *-(:3 ?! ðF "G÷
+X#â(8ÇBa9 y ð{ ð{ " F 7# "Gÿ~ B g] ð*5 i > B >G÷+X#â(8ÇBaCXBaXBa
F >|. Aæ ~

3

- L 9?δ° F " \ Ø# p+XB r w j 6 Åß ""d j GB/T 6682 ?δ°, 04x"d ~
- 3.1 +bG• CH₃OH ÖÇBa4ß ~
 - 3.2 7x C₂H₃N ÖÇBa4ß ~
 - 3.3 +bG² CH₂O₂ ÖÇBa4ß ~
 - 3.4 "X"d NH H O ÖÇBa4ß ~
 - 3.5 [0.1%+bG²"d \$æâ +bG²~ 3.3 ~ 1 mL +X"dOOGœ8#100 mL " +X% 7]~
"d-(~E:~% > 7+X ~
 - 3.6 50%+bG•"d\$æâ ö Gy 500 mL +bG• ~3.1 ~ ¼ 1 L ØGÿ+&] "X"d ° Ø8#k Ö ~
 - 3.7 [0.1%+bG²,+bG•"d\$æâ Ö 1 mL +bG²3.3 ~ +X+bG•"d\$æâ 3.6 °OOGœ8#100 mL ~
 - 3.8 [0.1%+bG² 7x\$d\$æâ Ö 1 mL +bG² 3.3 ~ +X 7x ~ 3.2 ~ °OOGœ8#100 mL "% 7]~
~ " 9 j-(~E:~% > 7+X ~
 - 3.9 [0.1%+bG², 7x"d\$æâ Ö 0.1 mL +bG² 3.3 ~ ... 35 mL 7x ~ 3.2 ~ "X"dOOGœ8#
100 mL "\$' O ~
 - 3.10 [5%"X"d, +bG•\$æâ Ö 5 mL "X"d ~ 3.4 ~ " +X+bGOOGœ8#100mL "\$' O ~ ~ d+X
)àG} ~
 - 3.11 5 i > B 7 öæ Ö
5 i > B 7 öæ; 6 ? ~() 6 Gy 9! • =0 ^ CAS ,« 'æ> 1 "4ß Ö199% ~

1 B CAS

		CAS		
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5 i > B	Rhodamine B	81-88-9	C ₂₈ H ₃₁ ClN ₂ O ₃	479.01
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3.12 5 i > B 7 ö Ø7#â Öö O 5 i > B 7 ö æ 10 mg ~ 2î. 8# 0.0001 g ~ " 5 %
100 mL ØGÿ+&] ~+X+bG\$æ f ° Ø8# k Ö" w O " f @# Öj , 7 ö Ø7#â ~

\$#â E O+8#B r+&] '5 %418 Ffl y " 9 x O j 6 Z 8 ~

3.13]L\$ 7 ö \$#â Öö O+ 0.5 mL 5 i > B 7 ö Ø7#â ~ 3.12 ~ %4100 mL ØGÿ+&] ~
+X+bG• ° Ø8# k Ö\$' O " ! \$#â.# Öj 500 ng/mL ~5 %4 Ffl y " 9 x O j 1 Z
8 ~

3.14 7 ö \$#â ÖX [0.1%+bGα, 7x"d\$#â ~ 3.9 ~ 6]L\$ 7 ö \$#â ~ 3.13 ~ OOGce @
0.0 ng/mL ^0.5 ng/mL ^1.0 ng/mL ^2.0 ng/mL ^5.0 ng/mL ^10.0 ng/mL ^20.0 ng/mL ^50.0 ng/mL
, 7 ö \$#â ~ d+X)àG} ~

3.15 \$' 8 »Lc/° *-(:3 ! ~ 60 mg/3mL ~ ÖCX j9 /*Gα F,6 9 ' - ... ' *9 Q
6 (" F-(65 ~ fl+X } "IQ+X 3 mL +bG• "3 mL "d#k F ~

3.16 Lf+' wCX ~

4

4.1 #â(8çBa ÖG)9 y ö#{ ~

4.2 #â(8çBaCXBaCXBa ÖG) 9+e çM./° \$À~ ESI \$À ~

4.3 ß#Ñ\$' 8 ~

4.4 /° ój Ö FO 18000 r/min ~

4.5 +e Y £ ÖOGÿ 6 [j 0.0001 g ...0.01 g ~

4.6 § /° ó1ÑÖ 50 mL ~

4.7 4ô4÷ .3/4 ~

4.8 *-(:3 >15 ~

5

5.1

F2Gÿ g æ " .3/4 '\$' O " h\$Y 7+X ~

5.2

F2Gÿ g æ "2,,3/4>E÷ 40 - 1 " h\$Y 7+X ~

5.3

u 6\$' O " h\$Y 7+X ~

5.4

F2Gÿ g æ " .3/4 "' \$' 8 w O " çÿ 7+X ~

5.5

F2Gÿ g æ " .3/4 '\$' 8 w O " çÿ 7+X ~

6

6.1

6.1.1 Öa O 2 g OÉ, Ég æO 1 g 2i. 8# 0.01 g B g5 ¼50 mL É°
 ó1Ñ] ä — 10.0 mL [0.1%+bGα,+bG•"d\$ã 3.7 — \$' O — Lf+' wCX TN'
 B3 E"ØB gL F — ¼B#Ñ' O :#ÑB 15 min ¼ 8000 r/min /° ó 10 min 3 mL
 #âr\$ã E÷ 9 j-(% 7Ì > μ ð F ~

6.1.2 ðF Ö ö O+ 1.0 mL #â 6.1.1 8# *-(;3 ! 3.15] "IQ+X 3 mL 0.1%
 +bGα"d\$ã 3.5 ^ 3 mL "d ^ 3 mL +bG•#B#G *-(;3 ! +X 6 mL "X"d+bG•\$ã 3.10 ^
 #G7a- 7(" f flö#G7a#â "#G7a\$ã X45 ; "+X" ^"D i8#F ç " l>\$S+X1.0 mL 0.1% [
 Gα, 7x"d\$ã 3.9 \$æ OÉ, Ég#â !>\$S+X0.5 mL \$æ E÷ 9 j-(% 7Ì :
 j#{ ~

6.2

- a) 8çBa ! ÖC₁₈ ! " 4.6 mm×100mm "2' · 3.5 μm " F W7--(65 ~
- b) #q Ø(ÖA j 0.1%+bGα"d\$ã 3.5 " B j 7x ~ 3.2 " B ÖG7aO; ¿æ> 2 ~
- c) #qFO Ö.0 mL/min ~
- d) !SY Ö35 ~
- e) F gGy Ö ~
- f ~%ð # Kfl Ö550 nm × 4# Kfl Ö580 nm ~

2

&L\$(min)	#q Ø(A ~% ~	#q Ø(B ~% ~
Initial	65	35
0.1	65	35
6.0	30	70
6.5	30	70
8.0	65	35
10.0	65	35

6.3

$$L = -B g F " w 9B g <# ý ~$$

7

B g]5 i > B , [Gy 9 ? ~ 1 - AÑ '9ç · Ö

$$= \frac{x}{x1000} \times \quad \sim 1 \sim$$

?] Ö

X B g]5 i > B, [Gÿ" } j" {!ÿ s { ~ mg/kg ~ x

c B g]5 i > B M O) ~, # Ö" } j4ª {!ÿ" w ~ ng/mL ~ x

V B g ° Ø O " } j" w ~ mL ~ x

m O gGÿ" } j { ~ g ~;

OOGæ ~

AÑ 5 ì Gy = W & ;9ç ;, T!Q) OB#{ °5 ì, 1' _ É w l> /j "5 ì + 9 } 9

x ~

8

XGý = W & ;9ç ;, T!Q) OB#{ °5 ì, 5) l = 'CµE±1' _ É w l, 10% ~

9

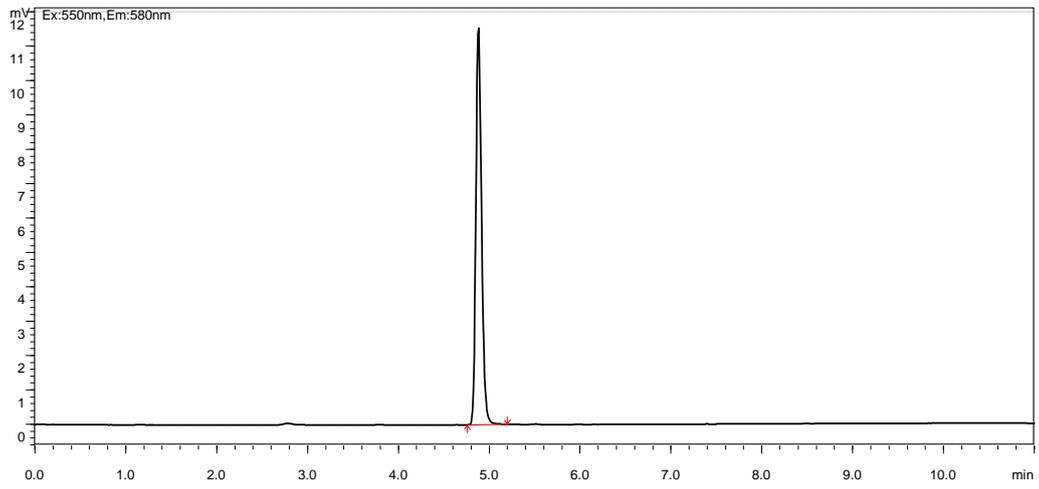
O gGÿ j 2 g ~ OÉ, Ég æO 1 g ~ & " \ Ø#]5 i > B, ð *L j 0.0025 mg/kg ~
 °GÿL j 0.005 mg/kg #â (8ÇBaCXBa. Aæ# ;, ð *L j 0.0025 mg/kg ~ °GÿL j 0.005 mg/kg ~

10

B g] ð * 5 i > B & " 9Lt B Ø# F >|. Aæ ~

A

B



. A.15 i > B 7 öæâ8Ba . # ÖÖ 5 ng/mL -

B

B

B.1. - /

- 80 Ba⁺ C₁₈ 100 × 3.0 mm 2', 1.7 μm F W7--(65
- #q Ø(A j [0.1%+bG₇ "d\$~~æ~~â 3.8 B j [0.1%+bG₇, 7x \$~~æ~~â 3.9 B Ö #G7a0; ¿?æ>B.1
- #qFO 0.4 mL/min
- !\$Y Ö40
- F gGy Ö
- CXBa ö3 & ö?æB.2

B.1

&L\$ min ⁻¹	#q Ø(A % ⁻¹	#q Ø(B % ⁻¹
0.00	80	20
1.5	80	20
2.5	5	95
3.5	5	95
4.5	80	20
5.5	80	20

B.2

- /° \$ÄÖ-e çM./° \$Ä ESI \$Ä
- ö{ Ø ? ÖJ ý - #{ MRM
- ÿØ ? Ö G+X! /° Q ? ÿ
- +e çM.+e » Ö500 V
- /° \$ÄY ÖÖ 550
- M. F"D » , Ö60.0 psi
- Eμ ÜD » , Ö 50.0 psi
- "D H"D » , Ö25.0 psi
- ° W/°) ° Gy/°) ° 27+e »à , 7-Gy?æ> B.2

	B.2	B	
6 Å	/°) m/z	°27+e » V	.à ,7-Gÿ eV
5 i > B	443.2/399.3*	20	59
	443.2/355.1	20	81

* > °Gÿ/°) ~
 # Öt B p G ö63CXBa & i , ö63 ° G+X = <CXBa & ° ò 7- X 2 °#{ ° } ~
 6CXBa ò H F ' O E ~

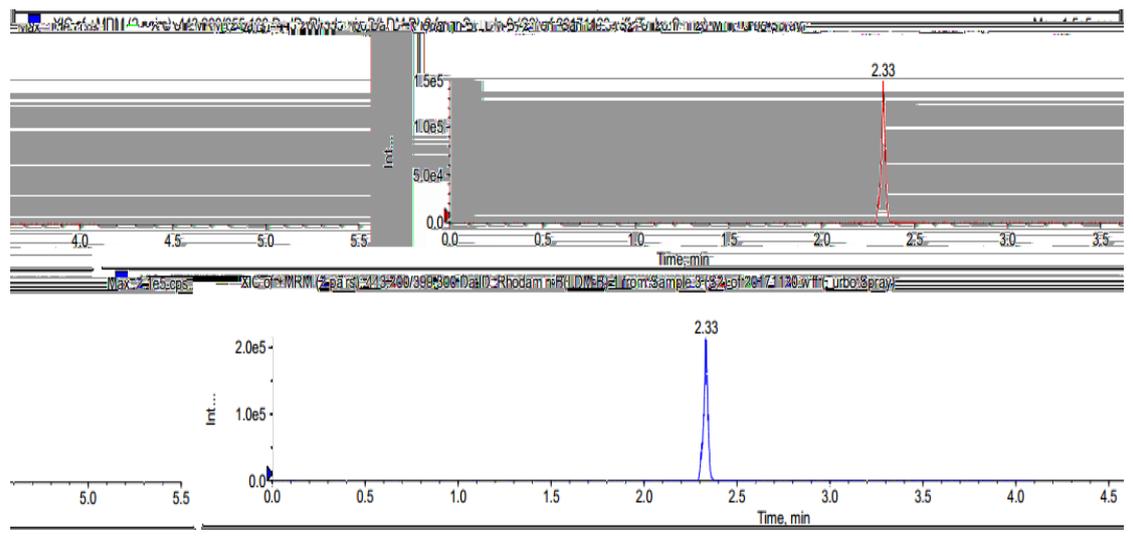
B.3.

9' B.1 ...B.2, &#{ °B g ... 7 ö\$#â ~† ìB g]CXGÿ8çBa + &L\$ > 7 ö \$æ
 #â08\$ ~ F93 \$ X±2.5% { µ ~B g]- 7 F 8(, T Z /° ,-() ' Ö># Ö... 7
 ö\$#â-() ' Ö...# Ö08\$ -() ' Ö =CµE⇒ B.3 ?ö ° ,93 \$ ° I T °B g] [
 95 i > B ~

B.3

-()/° ' Ö° % ~	>50	>20~50	>10~20	
qAt,-() ~ % ~	±20	±25	±30	±50

5 i > B , J ý ~- #{ ~ MRM ~ /° 8çBa .?æ . B.1 ~



. B.1 5 i > B 7 ö\$#â J ý ~- #{ /° 8çBa .

\ Ø# COCSC\$9y } Ö@G- 20 æ9 æ ðP...DOfL ~

P...Aæ } ÖG Ü2+î+IN·Lb x f] ó ^ j L-10 æ9 æ ðP...DOFL ^Eí --10 æ ðP...
ð#{L ^ j?fl-10 æ9 æ ðP... p ^ -10 æ9 æ ðP... ð#{L ^
k?-CŞ9y Ć Ö M ^ ~4ý# ^ & µ ^6~ O ^ /ð> ^ 4Ò