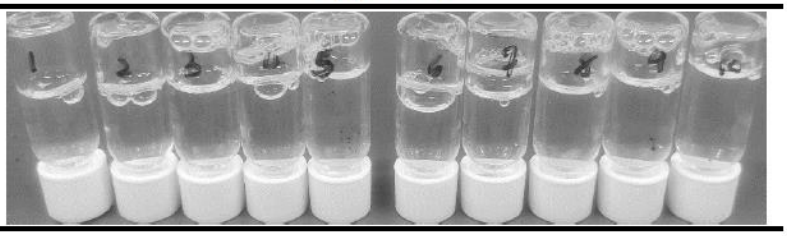
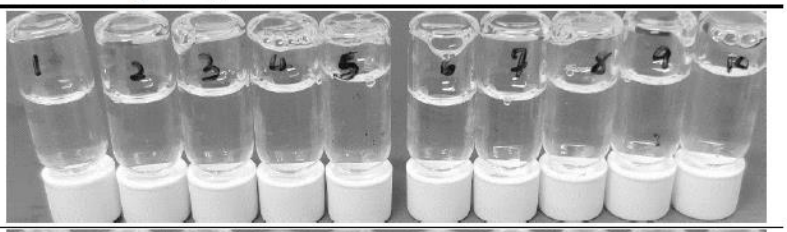
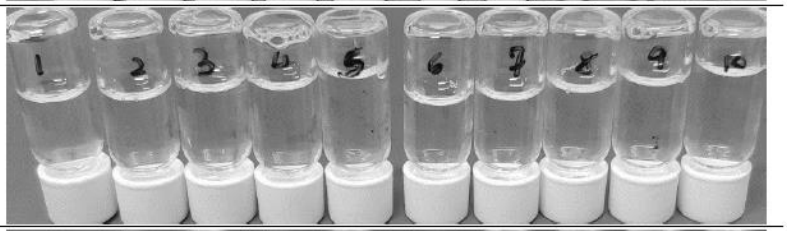
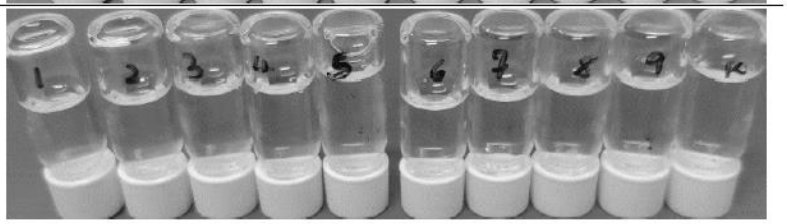
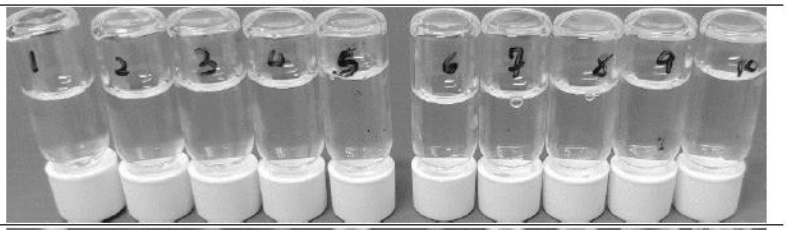
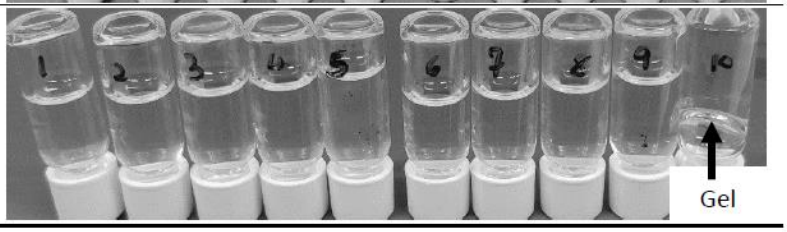
Group 1	Appearance
+ 100 mg/mL L-lysine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 1a

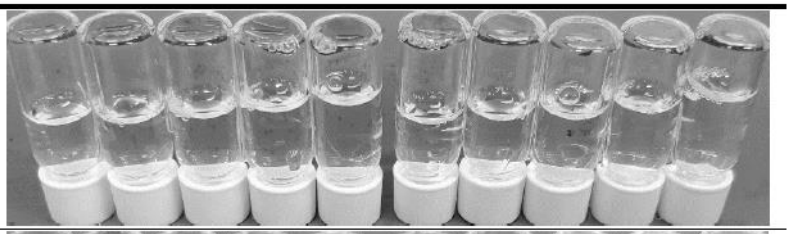
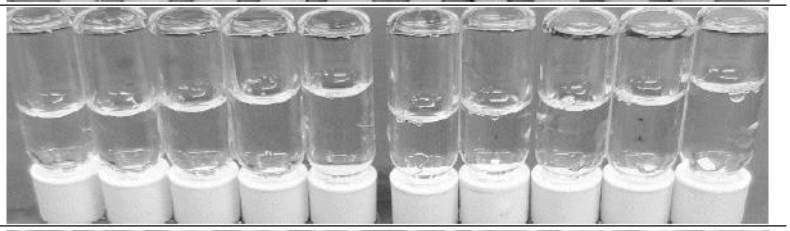
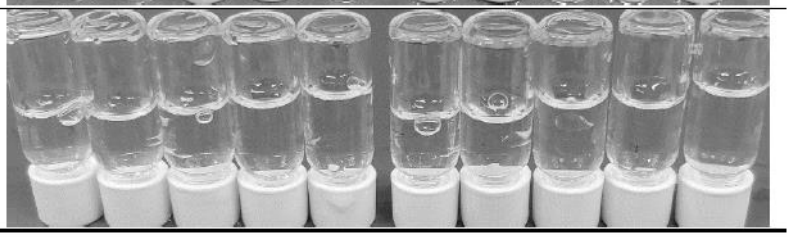
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 1a (continued)

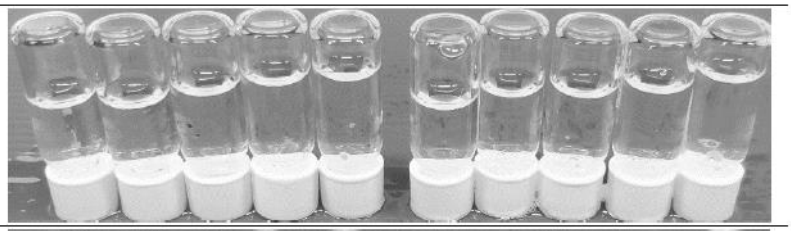
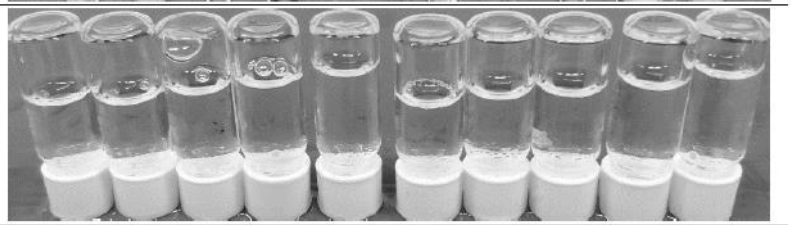
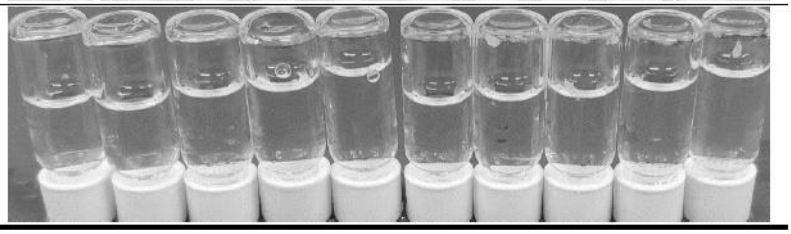
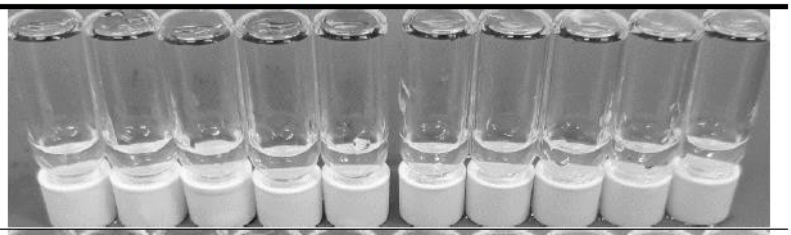
45 minutes	
60 minutes	
120 minutes	
After added to 0.9% saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 1a (continued)

120 minutes	

Figure 1a (continued)

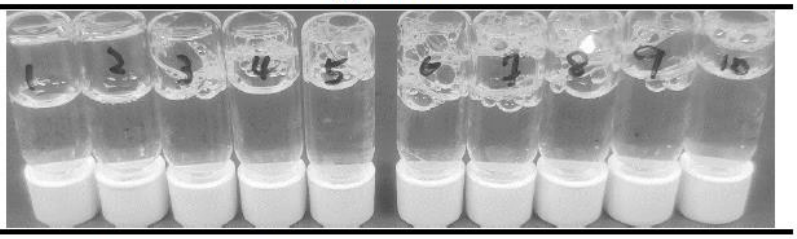
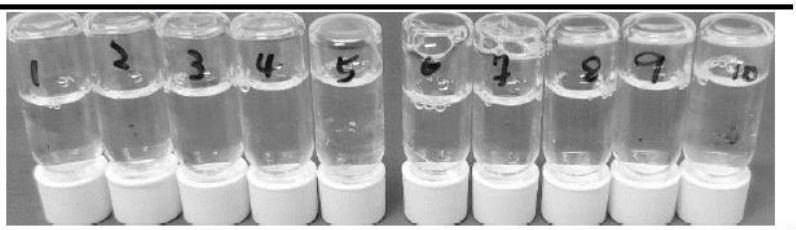
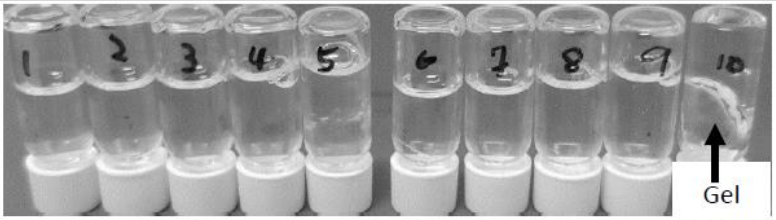
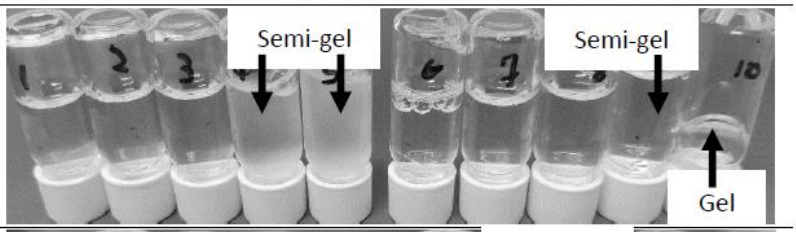
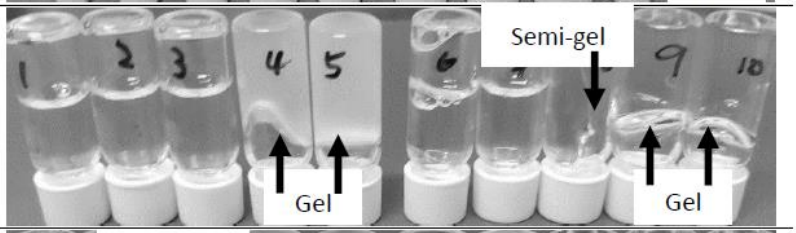
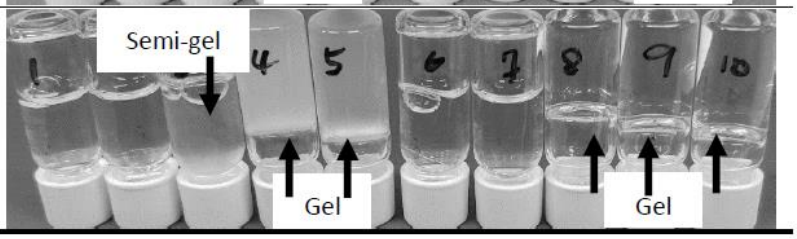
Group 2	Appearance
+ 200 mg/mL L-lysine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 1b

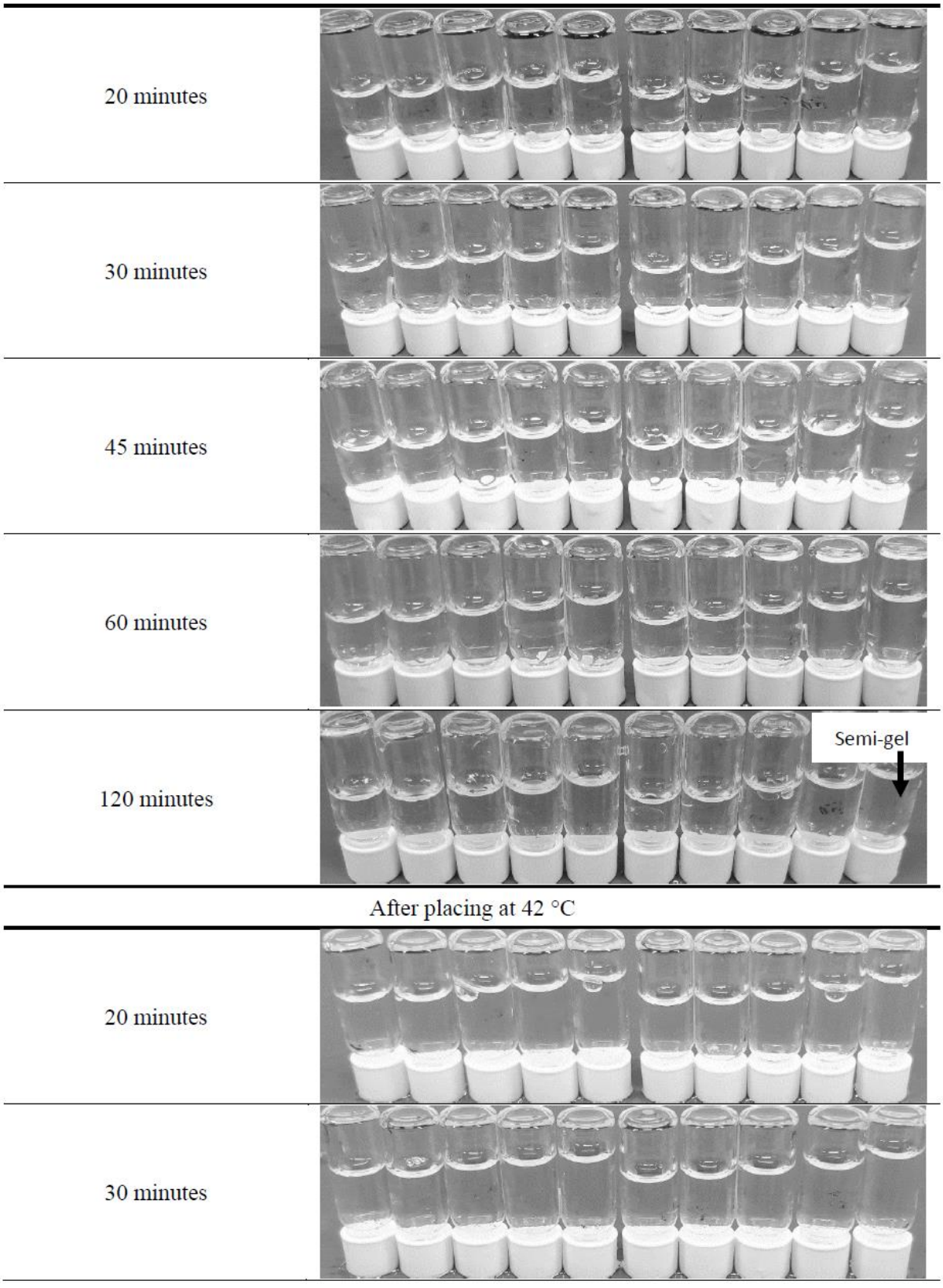


Figure 1b (continued)

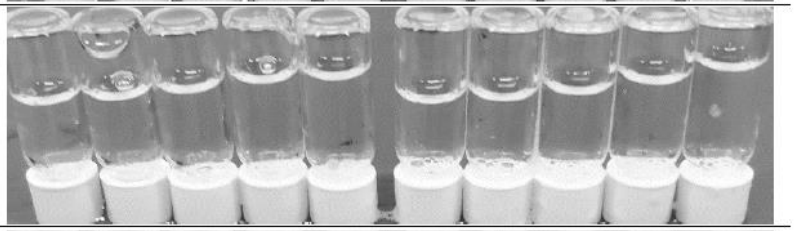
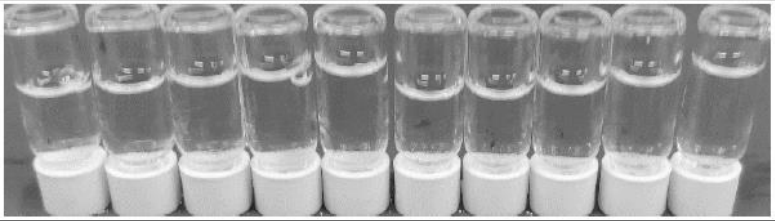
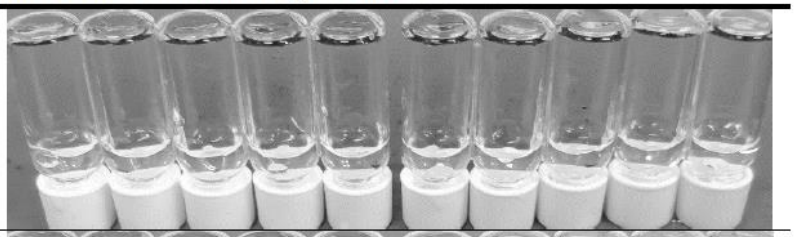
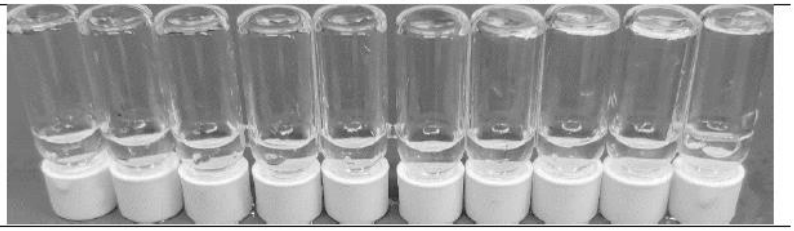
45 minutes	
60 minutes	
120 minutes	
After added to 0.9% saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 1b (continued)

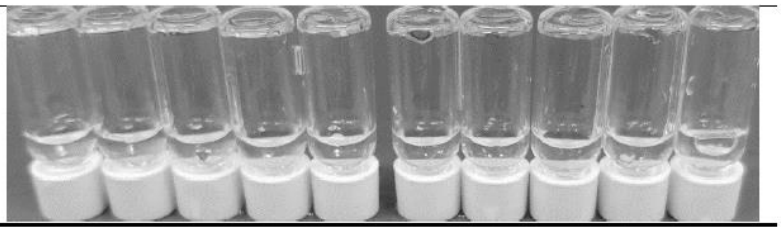
120 minutes	

Figure 1b (continued)

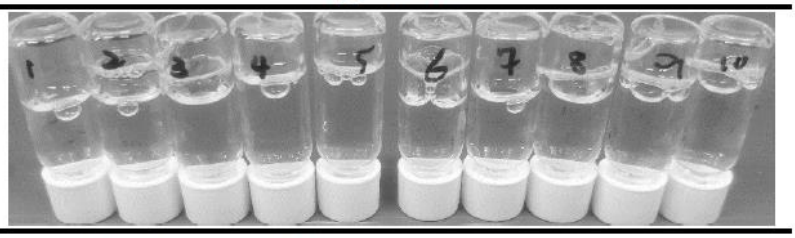
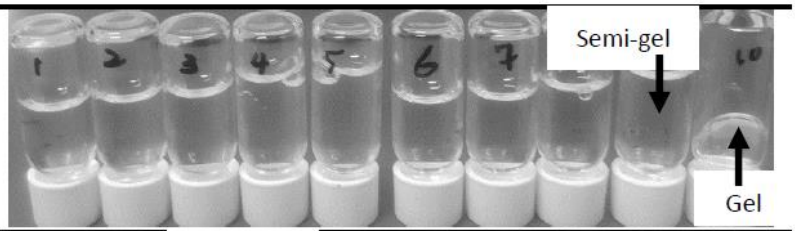
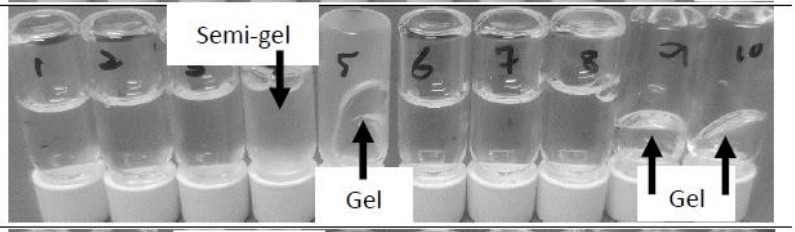
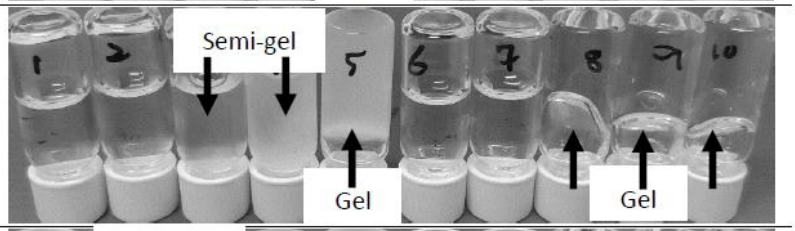
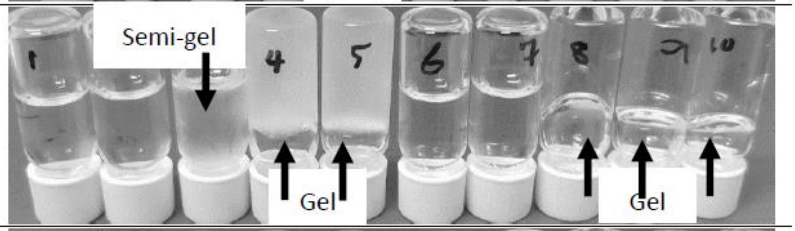
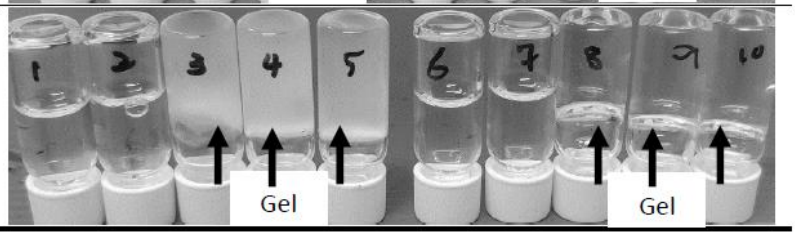
Group 3	Appearance
+ 300 mg/mL L-lysine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 1c

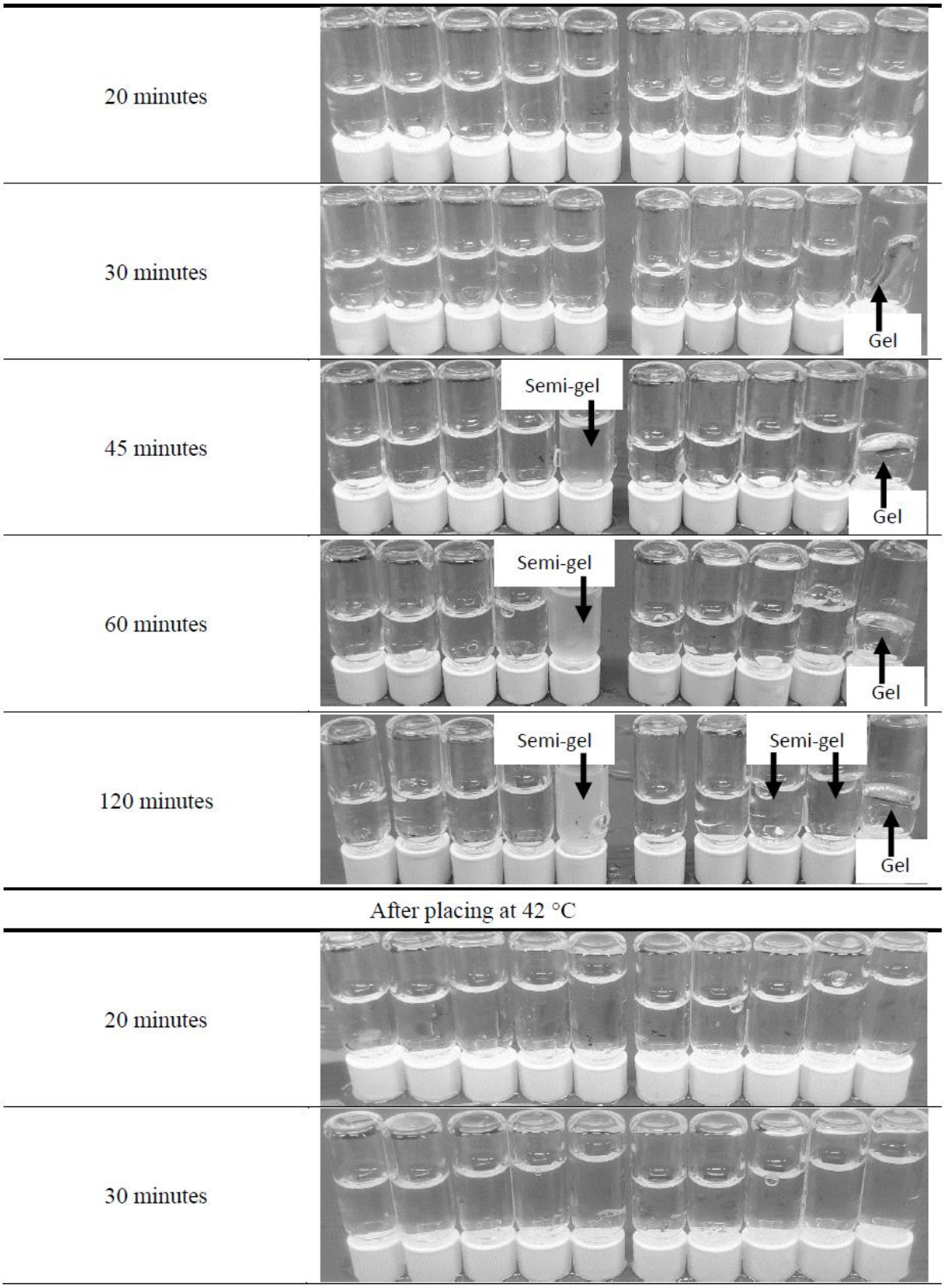


Figure 1c (continued)

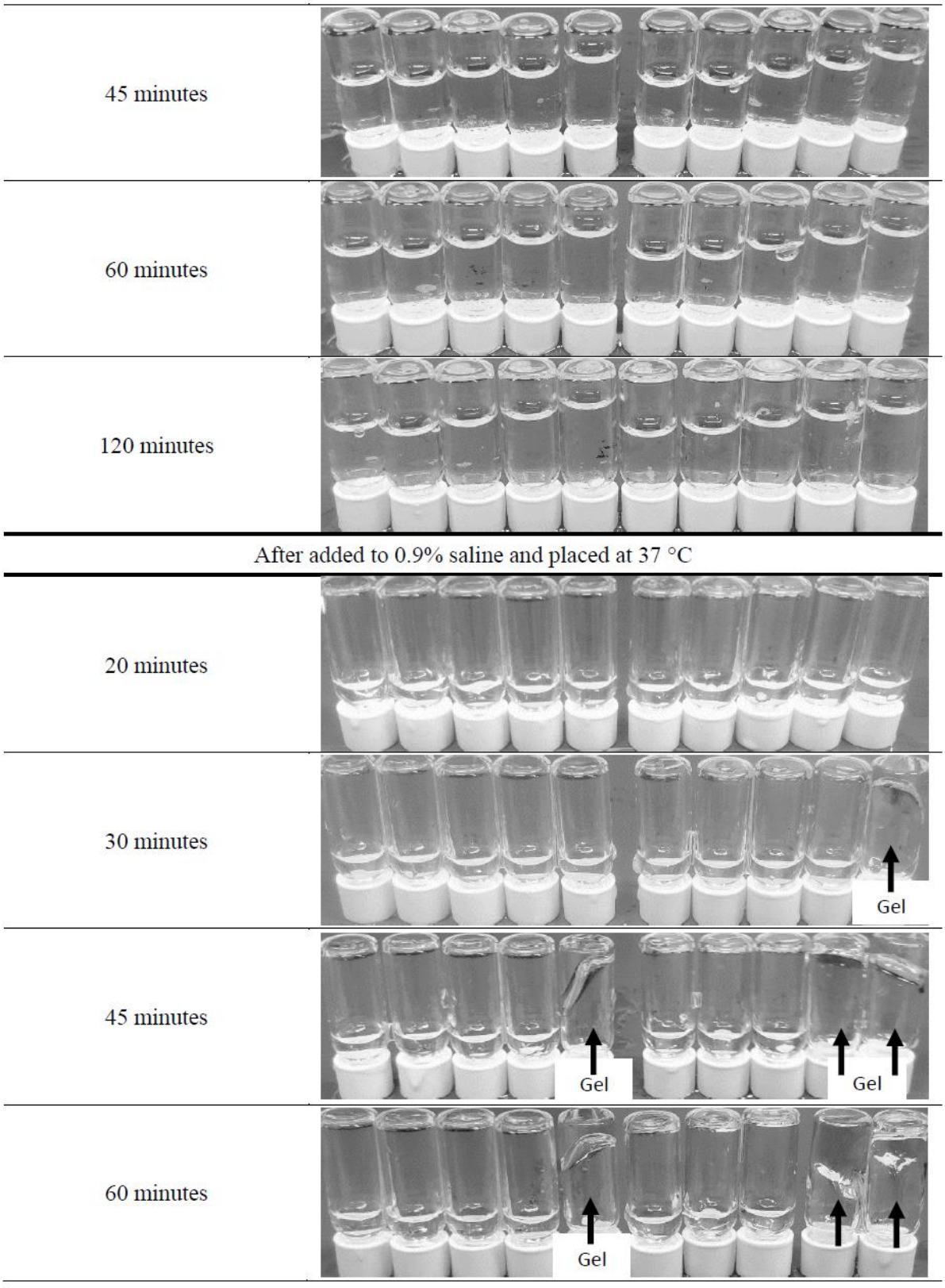


Figure 1c (continued)

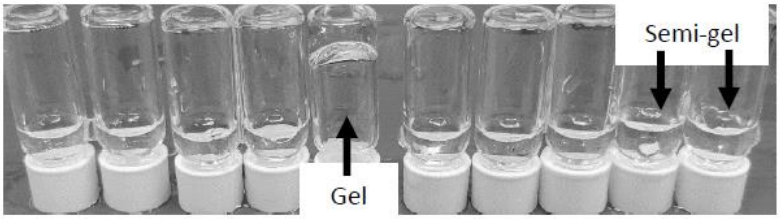
	Gel
120 minutes	

Figure 1c (continued)

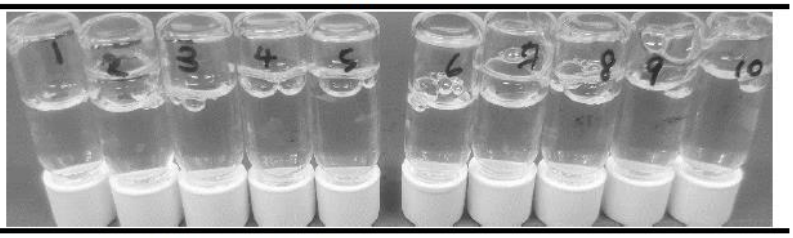
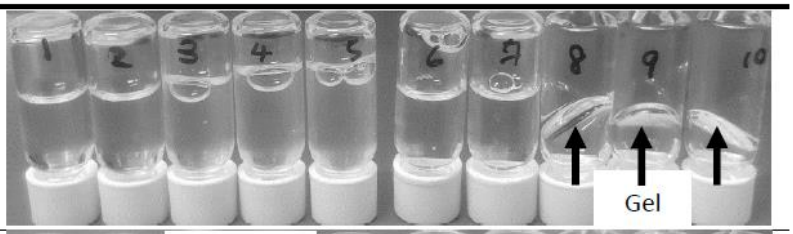
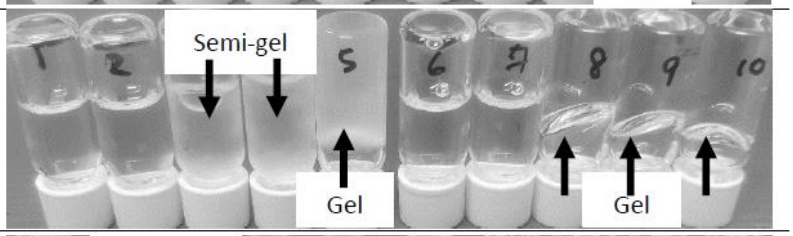
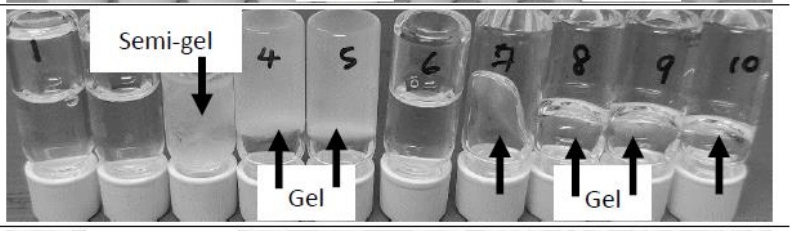
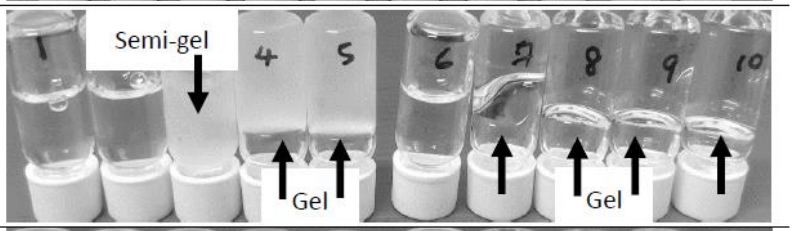
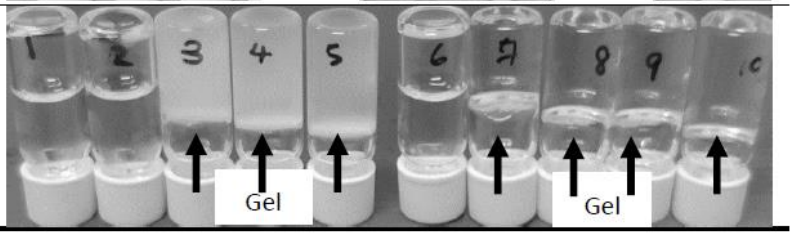
Group 4	Appearance
+ 400 mg/mL L-lysine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 1d

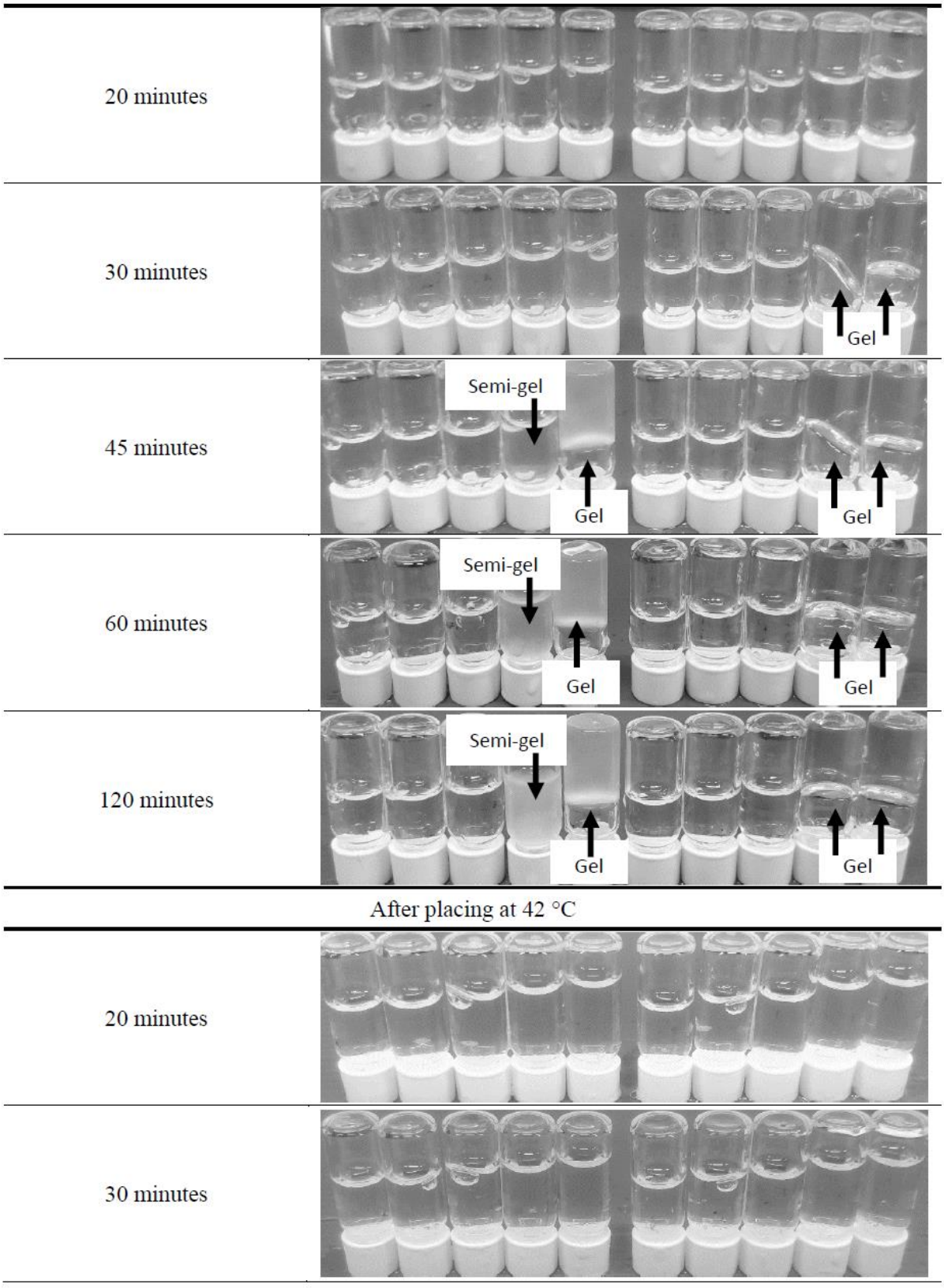


Figure 1d (continued)

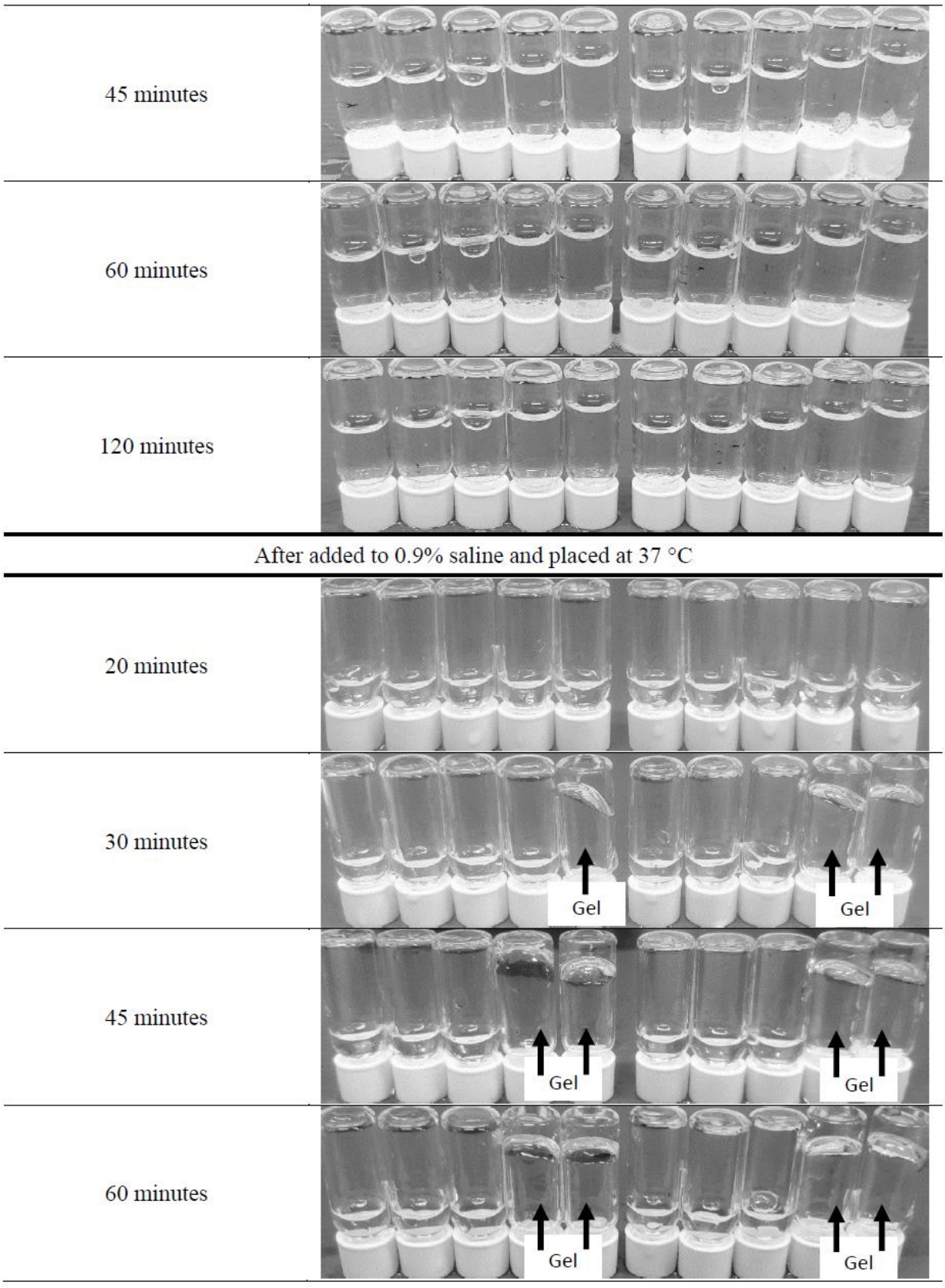


Figure 1d (continued)

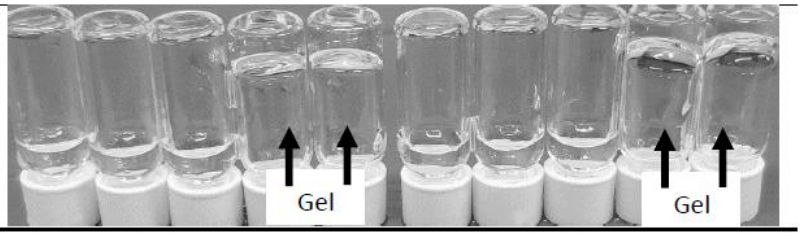
120 minutes	

Figure 1d (continued)

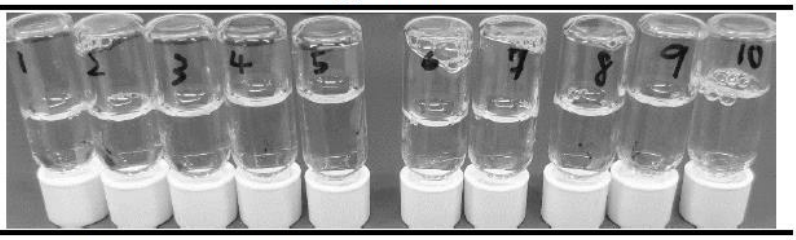
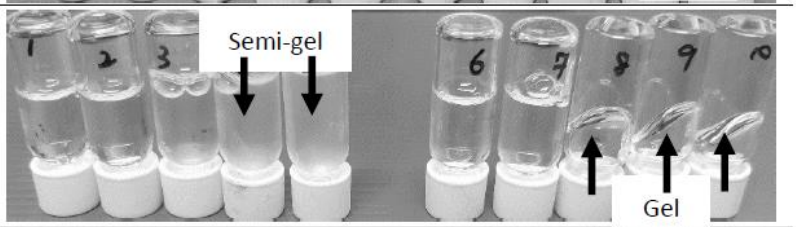
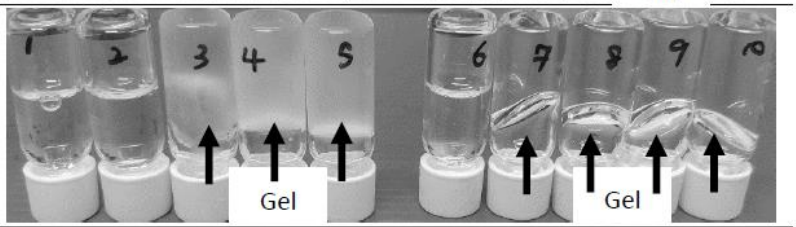
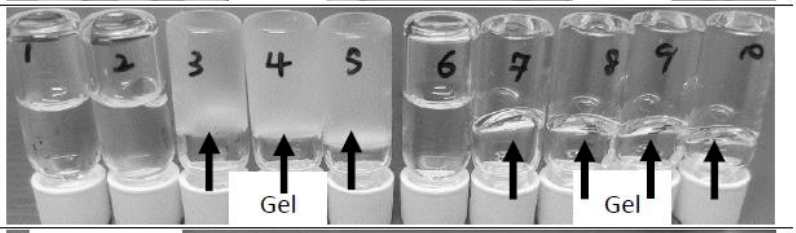
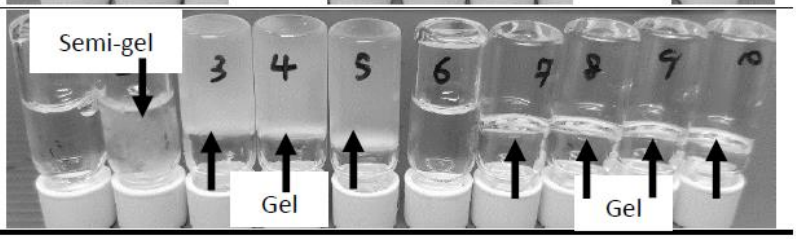
Group 5	Appearance
+ 500 mg/mL L-lysine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 1e

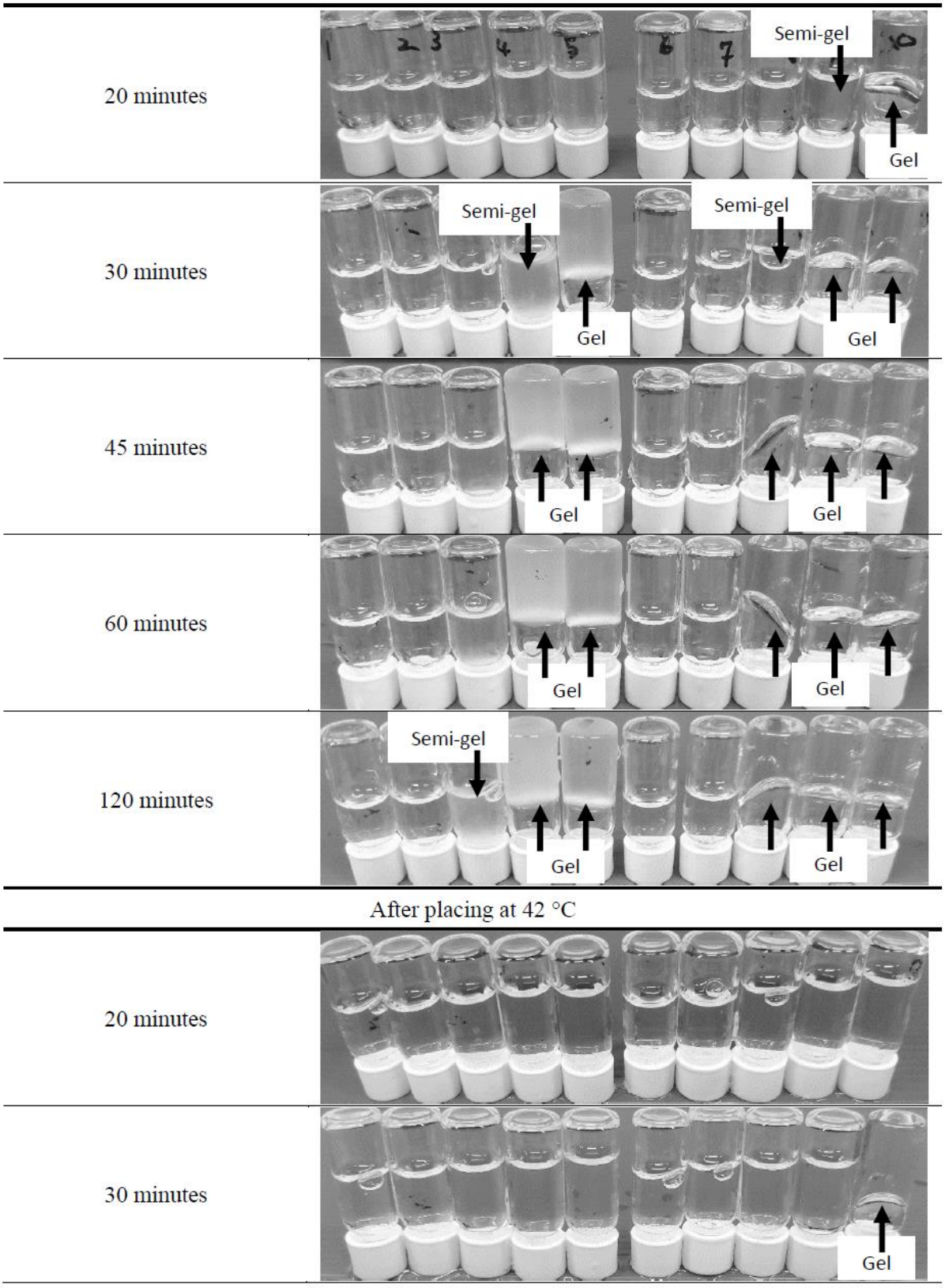


Figure 1e (continued)

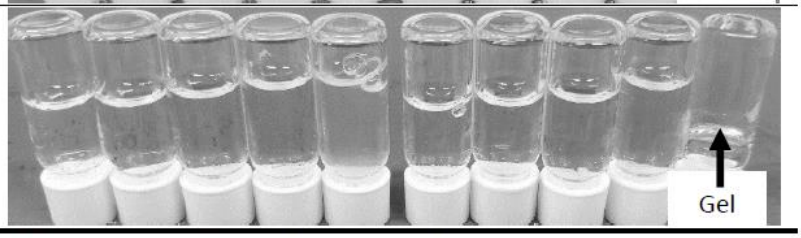
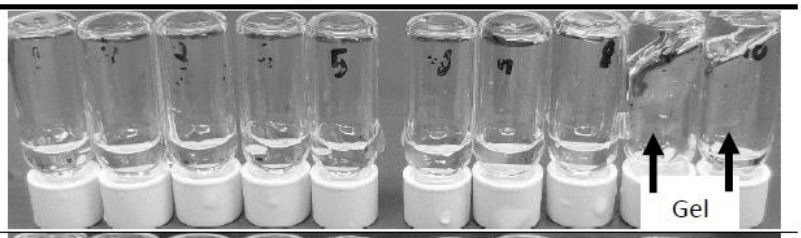
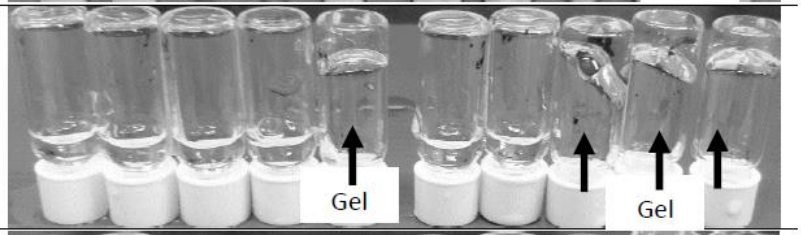
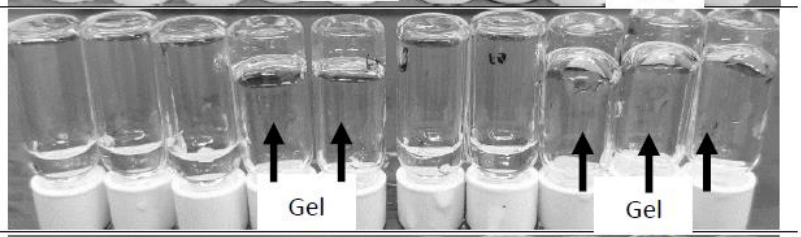
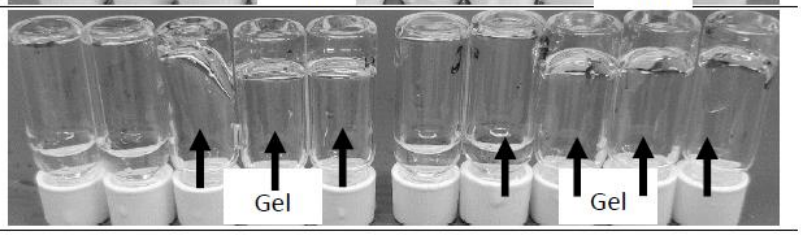
45 minutes	
60 minutes	
120 minutes	
After added to 0.9% saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 1e (continued)

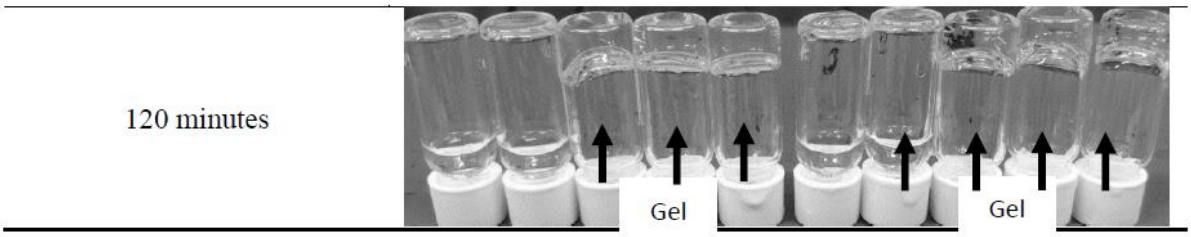


Figure 1e (continued)

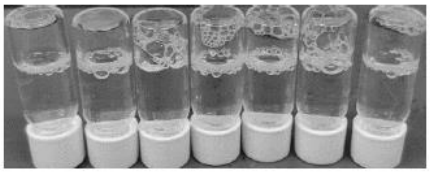
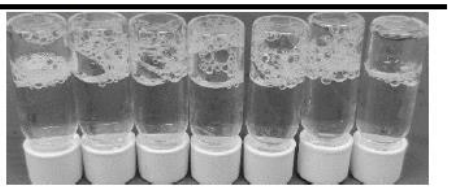
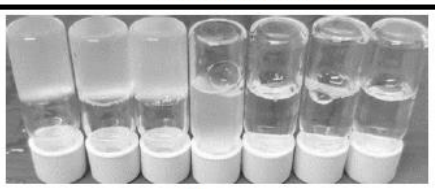
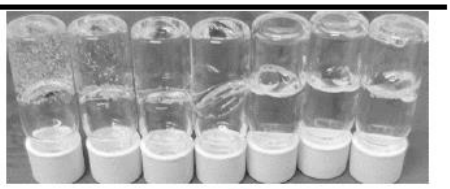
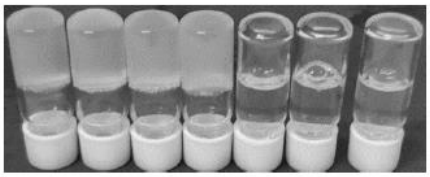
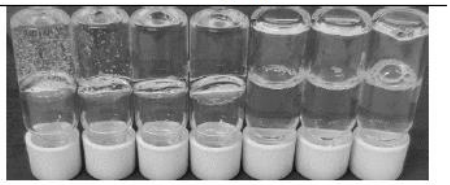
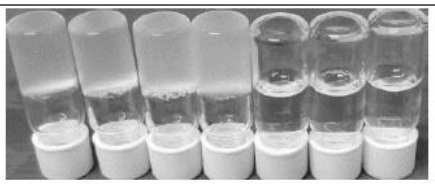
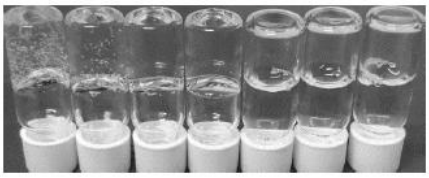
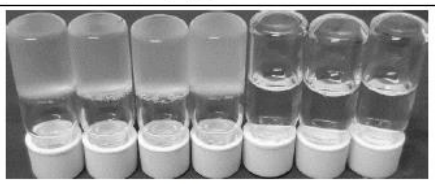
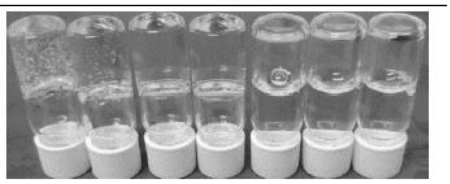
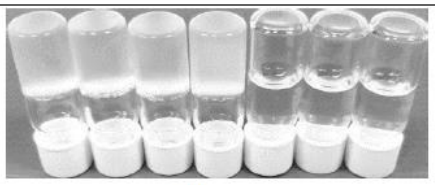
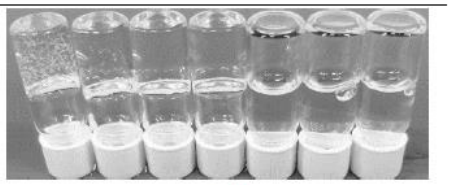
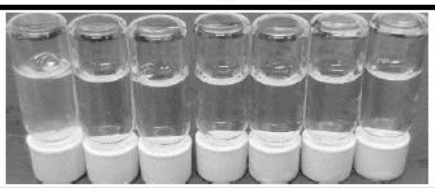
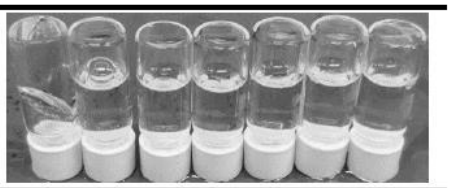
Group 1	Appearance	
+ 200 mg/mL L-lysine		
	5 %	1 %
After placing at 25 °C		
20 minutes		
	5 %	1 %
30 minutes		
	5 %	1 %
45 minutes		
	5 %	1 %
60 minutes		
	5 %	1 %
120 minutes		
	5 %	1 %
After placing at 37 °C		
20 minutes		

Figure 2a

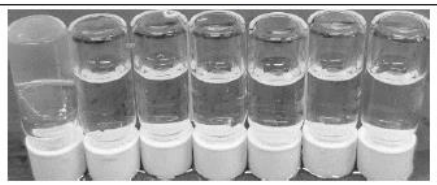
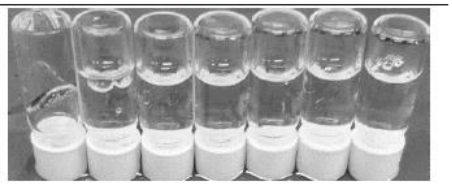
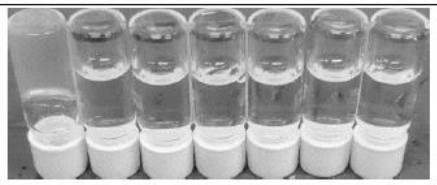
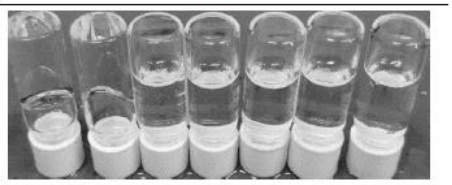
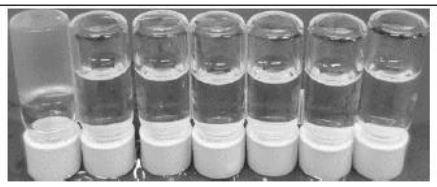
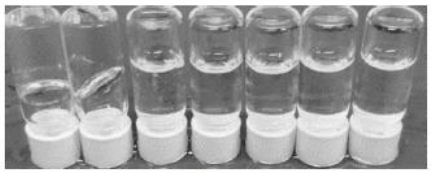
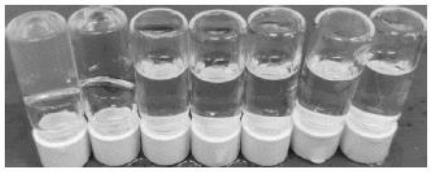
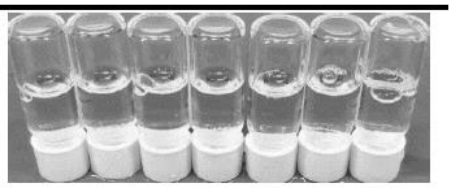
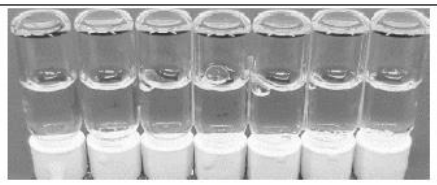
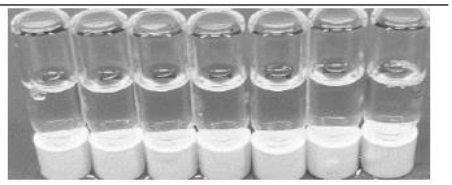
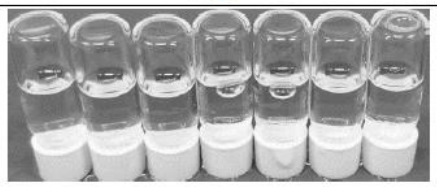
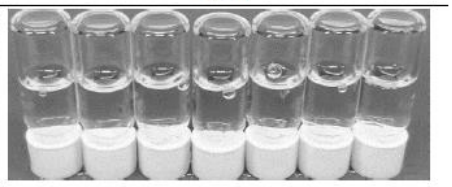
	5 %	1 %
30 minutes		
	5 %	1 %
45 minutes		
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60 minutes		
	5 %	1 %
120 minutes		
	5 %	1 %
After placing at 42 °C		
20 minutes		
	5 %	1 %
30 minutes		
	5 %	1 %
45 minutes		
	5 %	1 %

Figure 2a (continued)

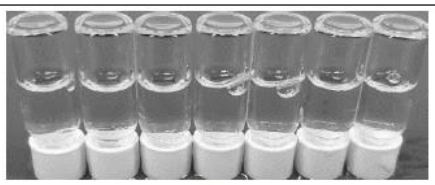
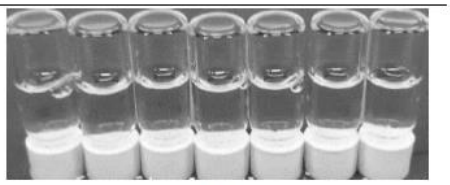
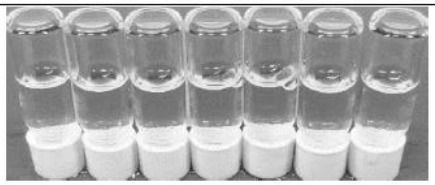
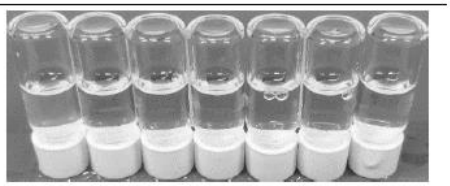
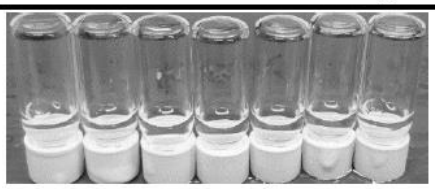
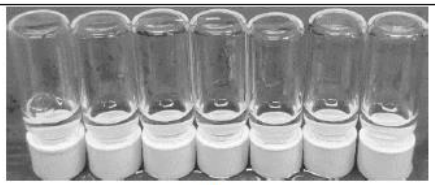
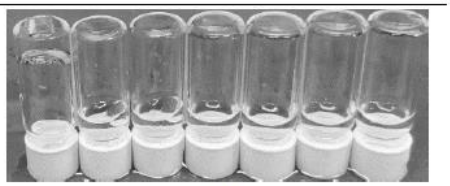
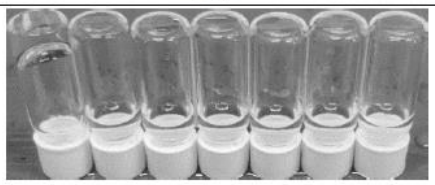
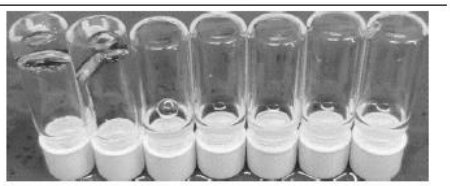
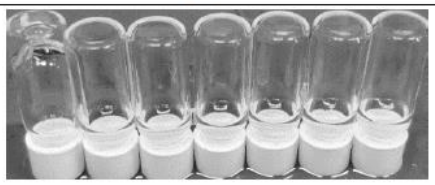
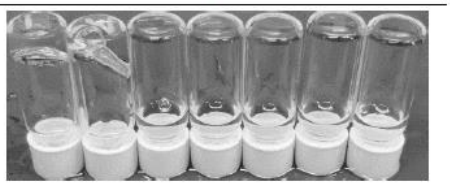
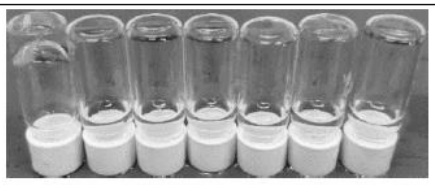
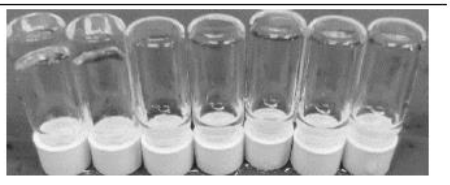
60 minutes		
	5 %	1 %
120 minutes		
	5 %	1 %
After added to 0.9% saline and placed at 37 °C		
20 minutes		
	5 %	1 %
30 minutes		
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45 minutes		
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60 minutes		
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120 minutes		
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Figure 2a (continued)

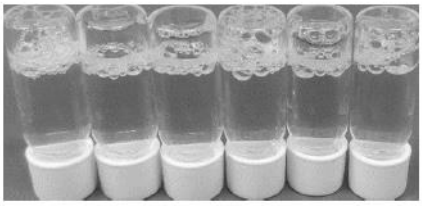
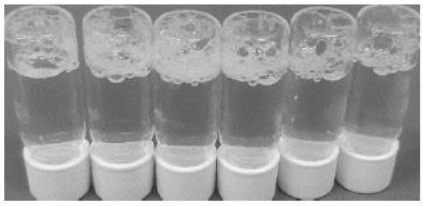
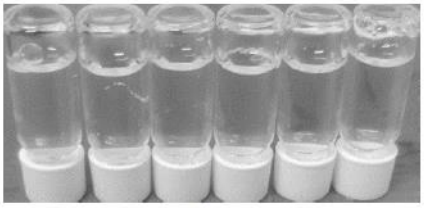
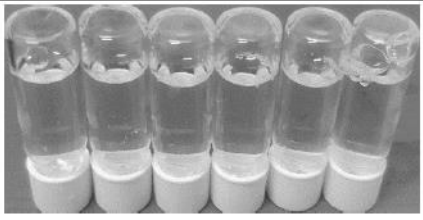
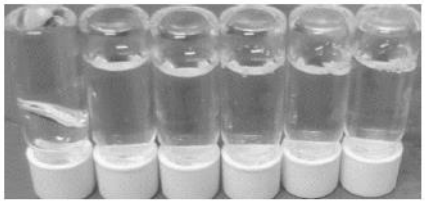
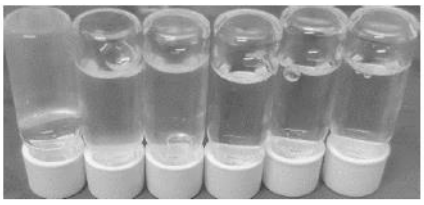
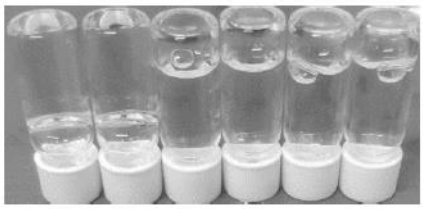
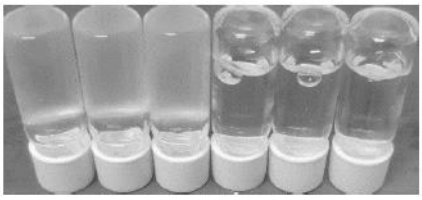
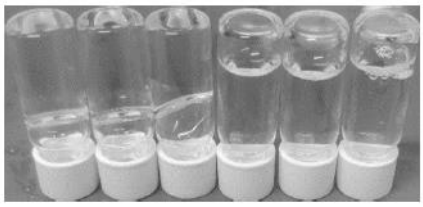
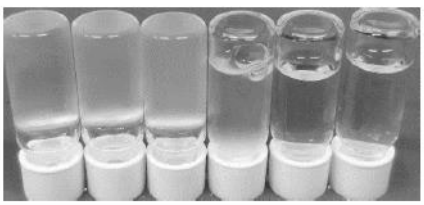
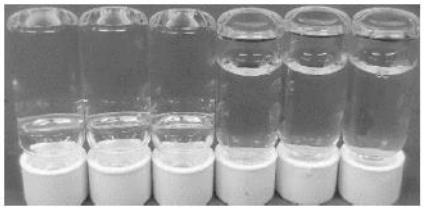
Group 2	Appearance	
+ 400 mg/mL L-lysine		
	5 %	1 %
After placing at 25 °C		
20 minutes		
	5 %	1 %
30 minutes		
	5 %	1 %
45 minutes		
	5 %	1 %
60 minutes		
	5 %	1 %
120 minutes		

Figure 2b

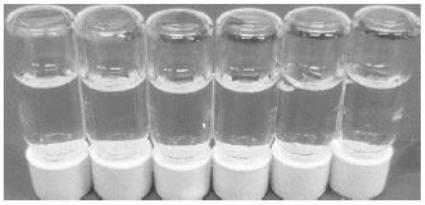
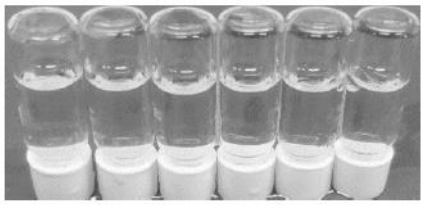
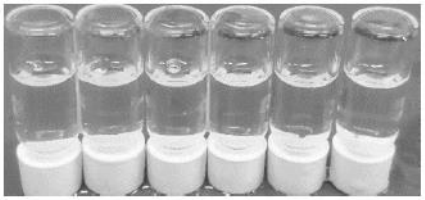
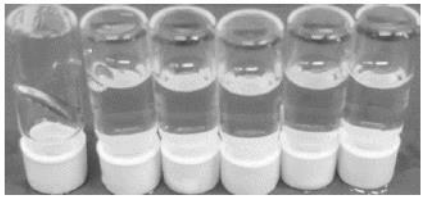
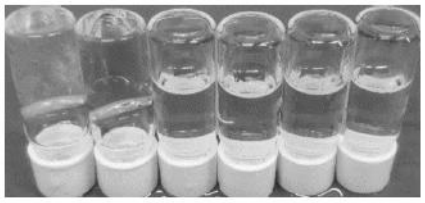
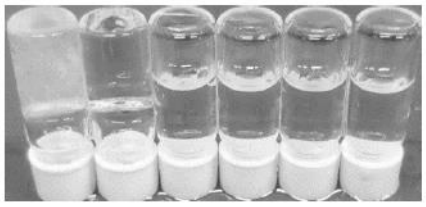
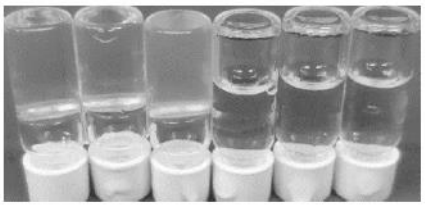
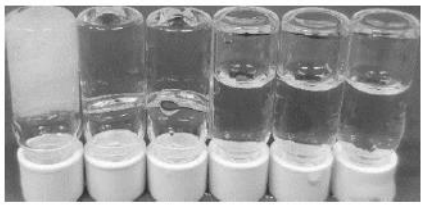
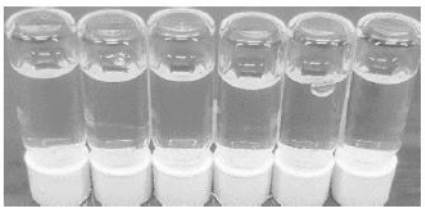
	5 %	1 %
After placing at 37 °C		
20 minutes		
	5 %	1 %
30 minutes		
	5 %	1 %
45 minutes		
	5 %	1 %
60 minutes		
	5 %	1 %
120 minutes		
	5 %	1 %
After placing at 42 °C		
20 minutes		
	5 %	1 %

Figure 2b (continued)

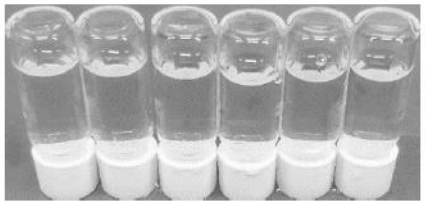
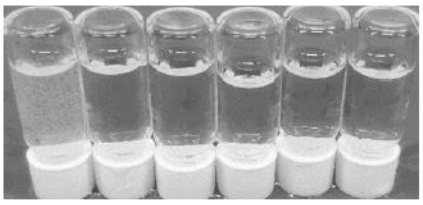
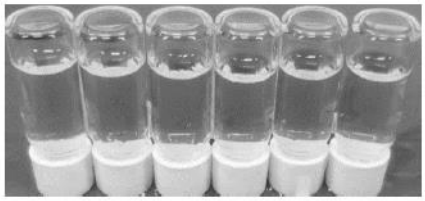
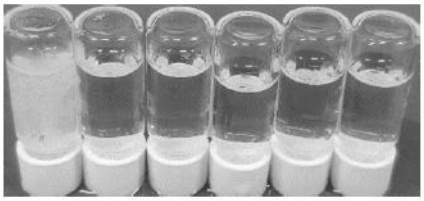
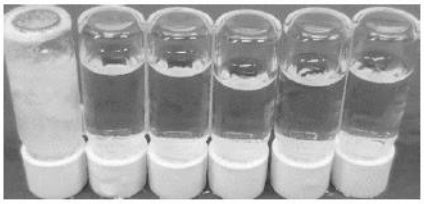
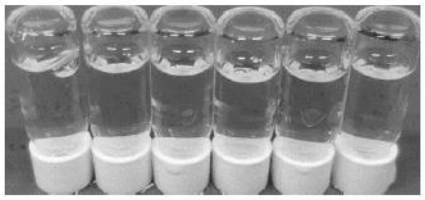
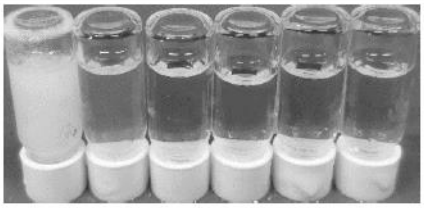
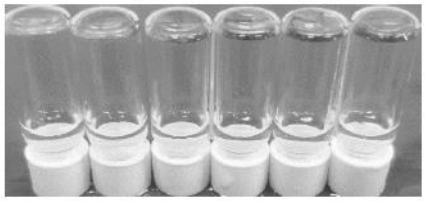
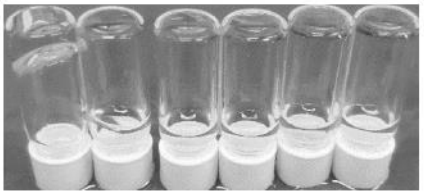
30 minutes		
	5 %	1 %
45 minutes		
	5 %	1 %
60 minutes		
	5 %	1 %
120 minutes		
	5 %	1 %
After added to 0.9% saline and placed at 37 °C		
20 minutes		
	5 %	1 %
30 minutes		
	5 %	1 %

Figure 2b (continued)

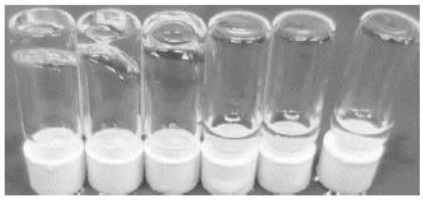
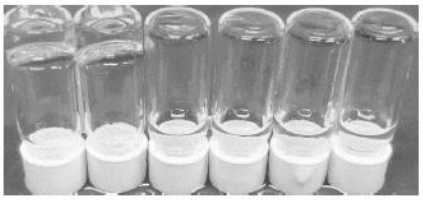
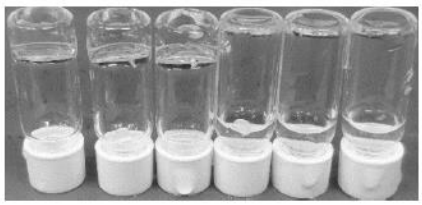
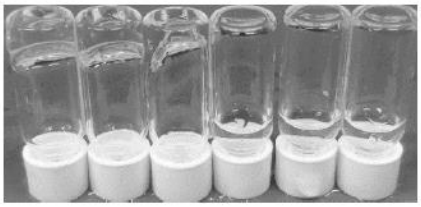
45 minutes		
	5 %	1 %
60 minutes		
	5 %	1 %
120 minutes		
	5 %	1 %

Figure 2b (continued)

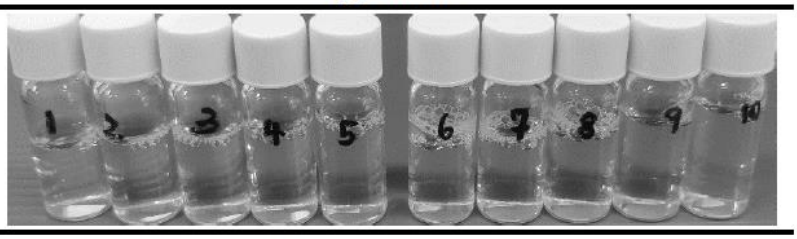
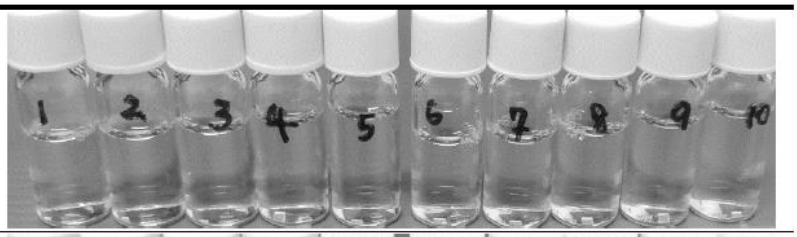
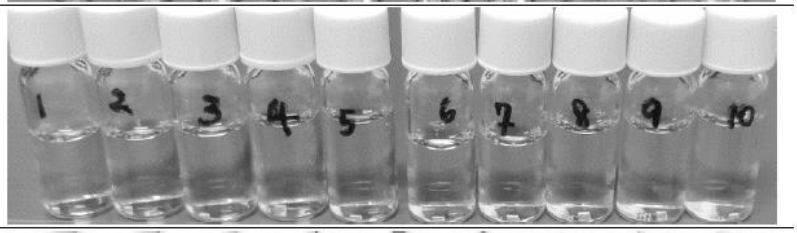
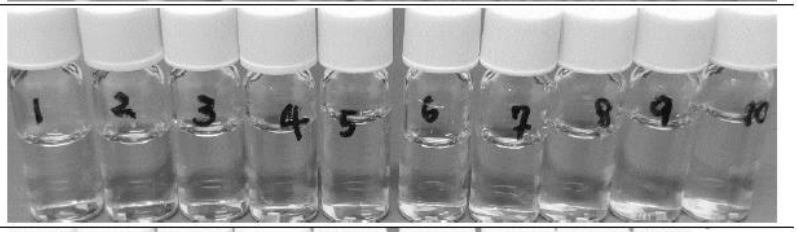
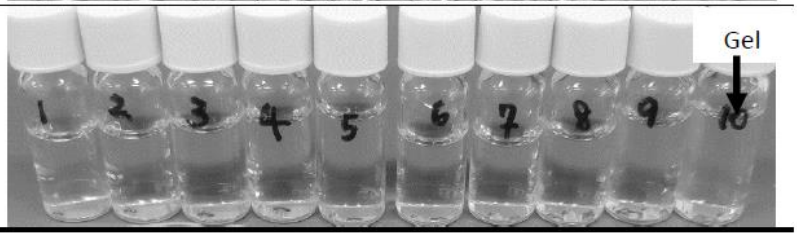
Group 1	Appearance
+ 90 mg/mL LA	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 3a

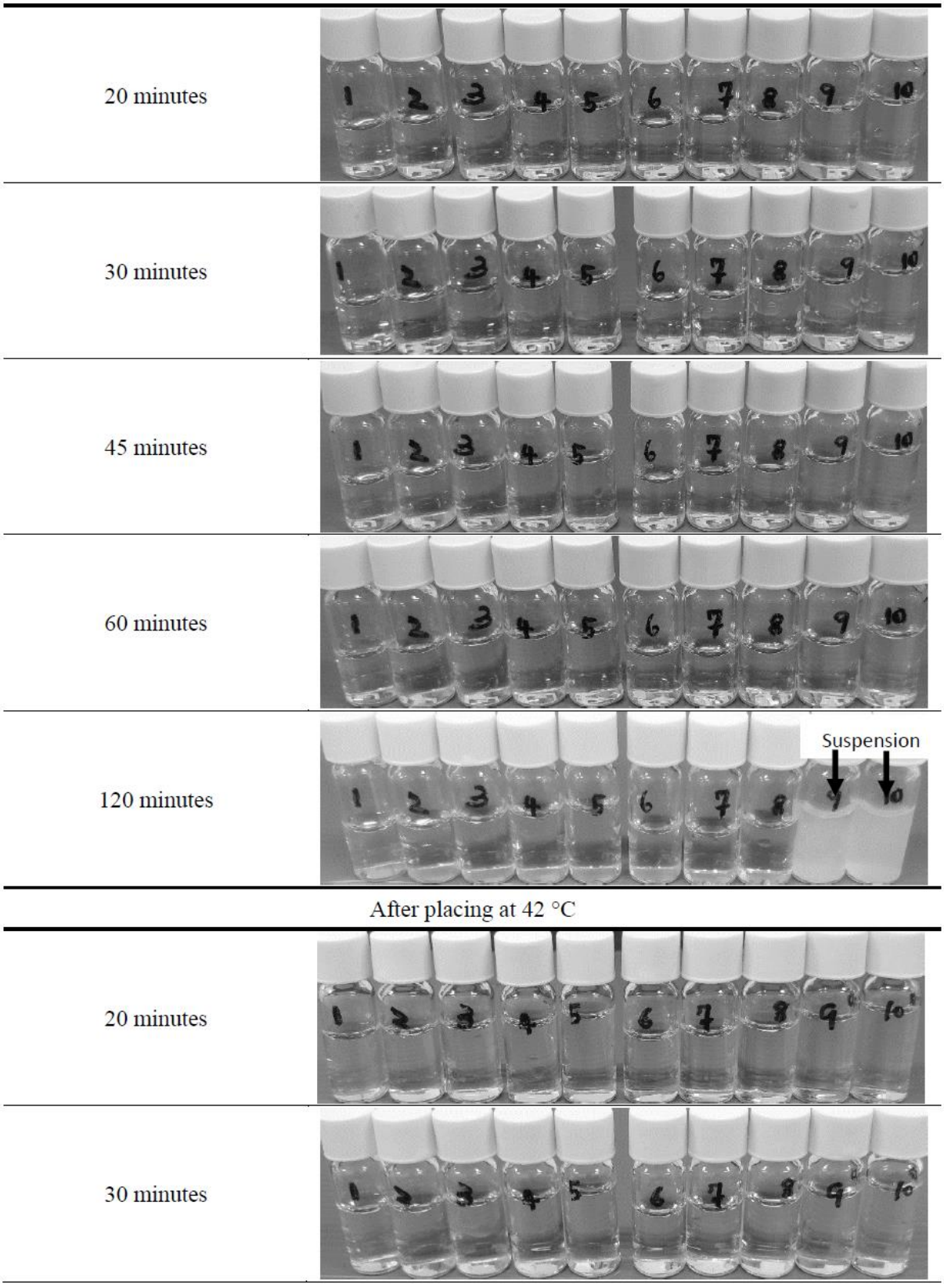


Figure 3a (continued)

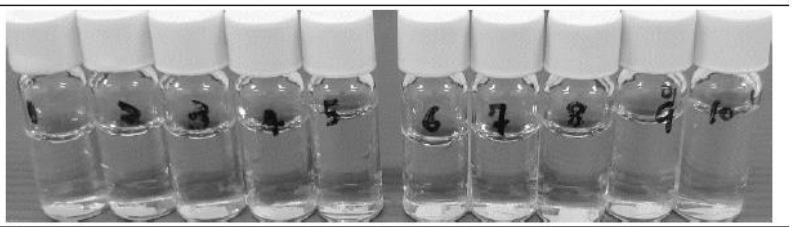
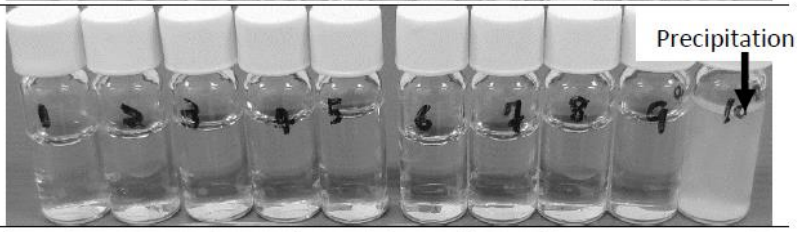
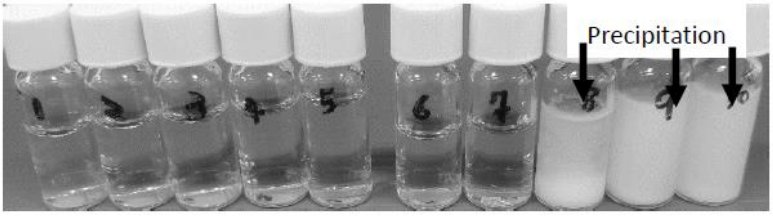
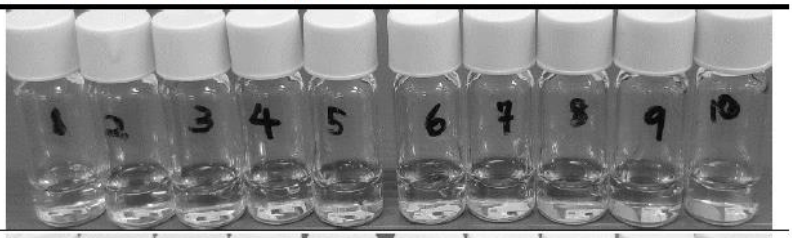
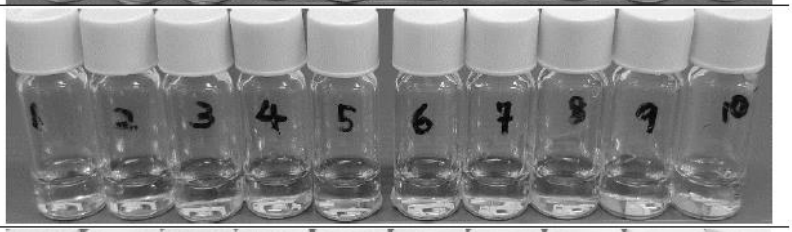
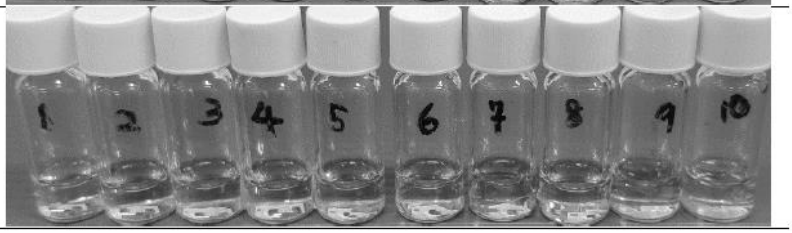
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 3a (continued)

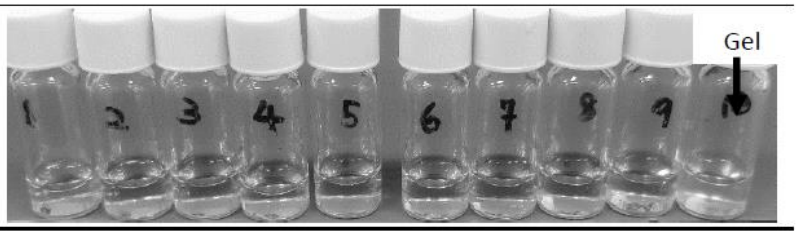
120 minutes	

Figure 3a (continued)

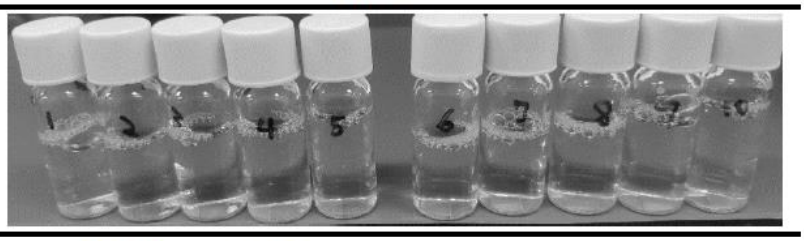
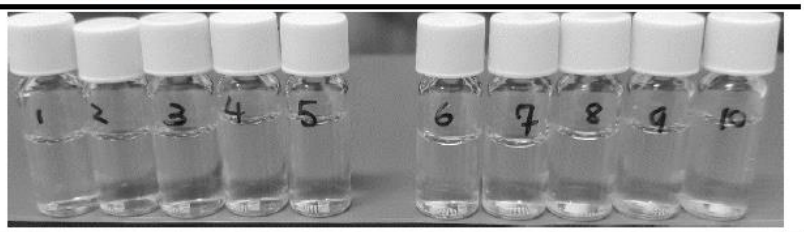
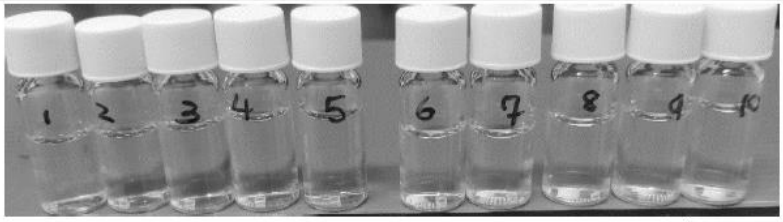
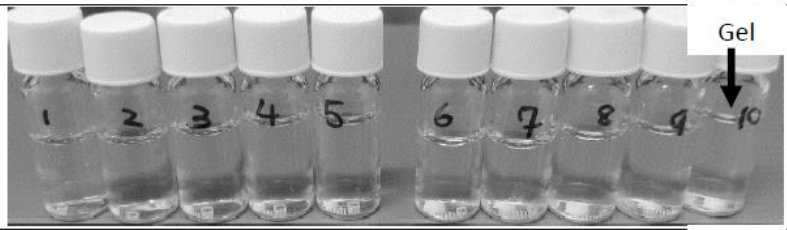
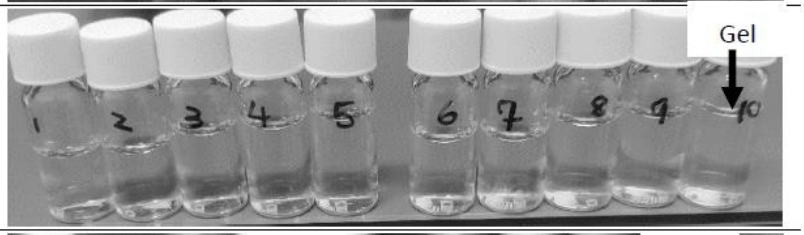
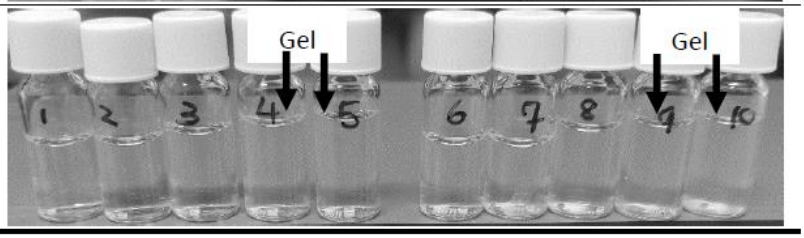
Group 2	Appearance
+ 180 mg/mL LA	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 3b

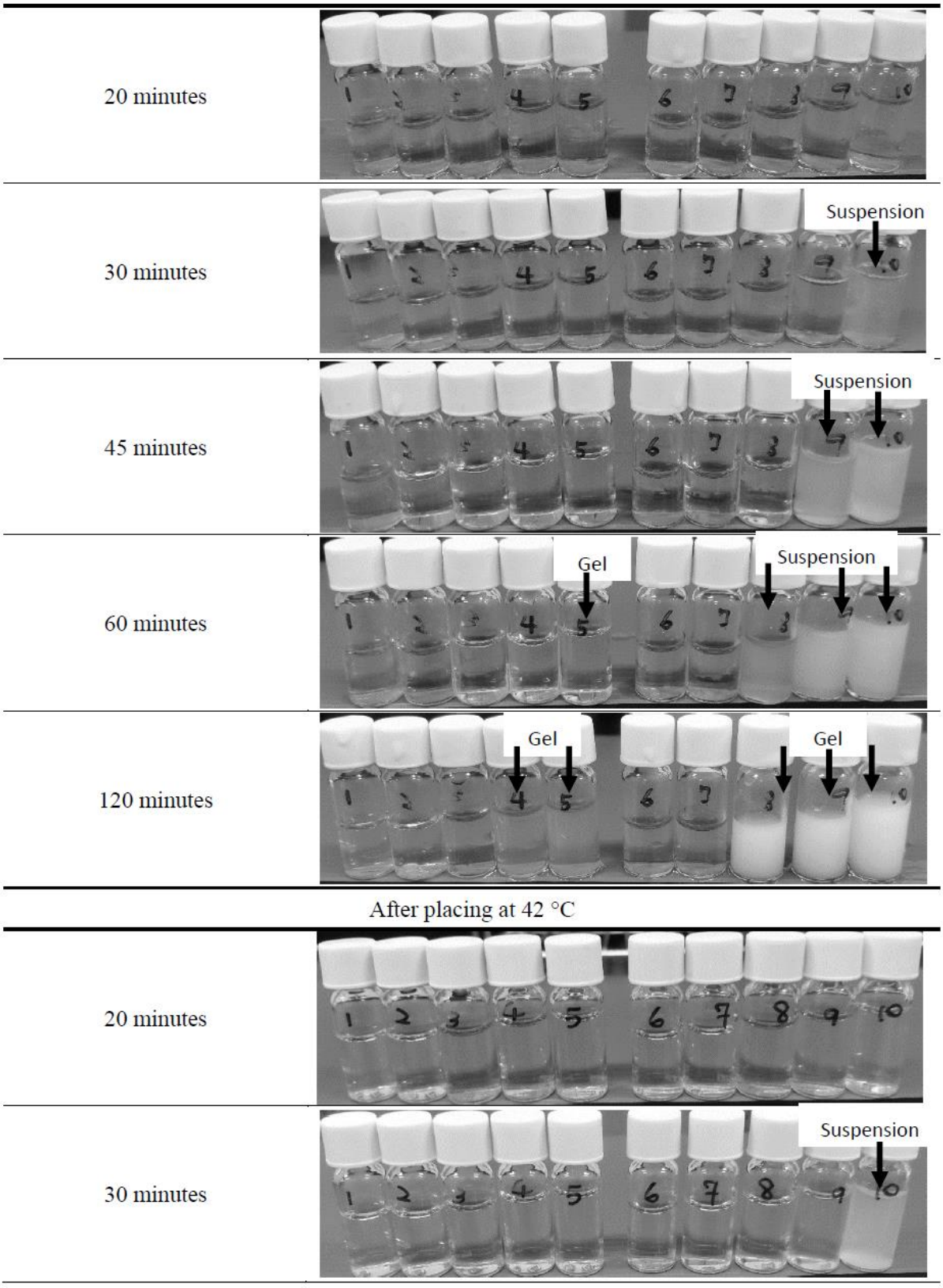


Figure 3b (continued)

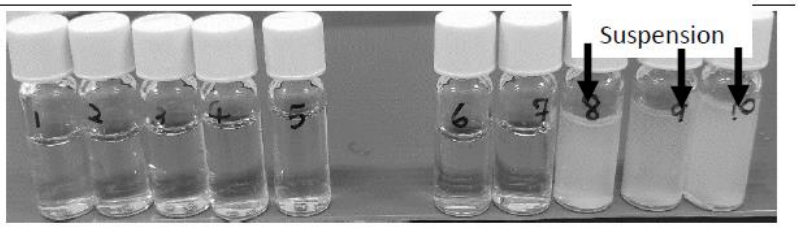
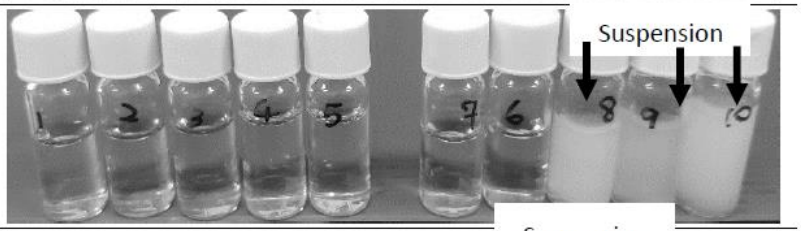
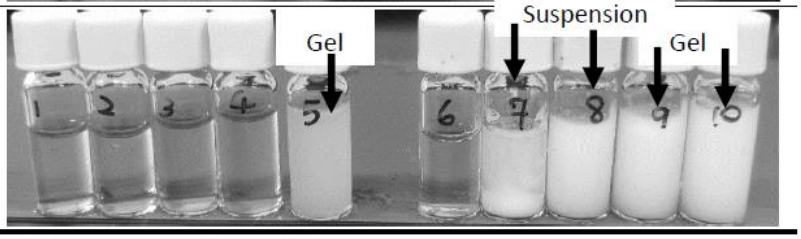
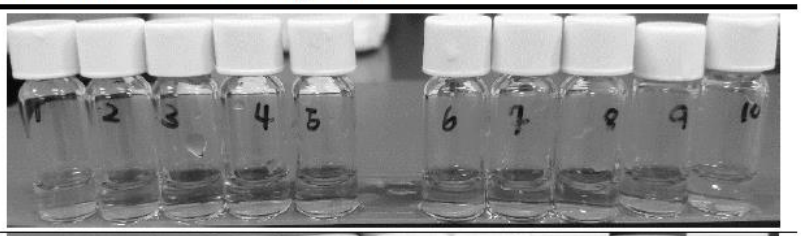
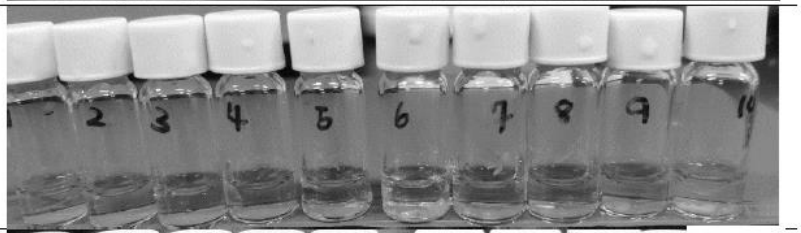
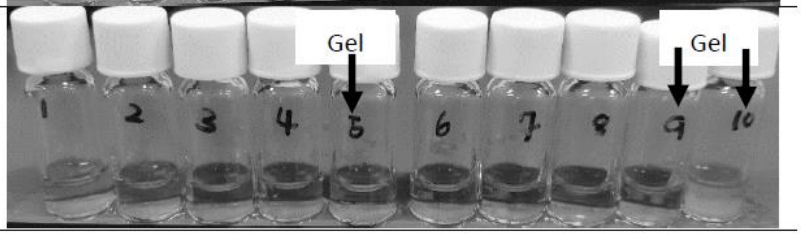
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 3b (continued)

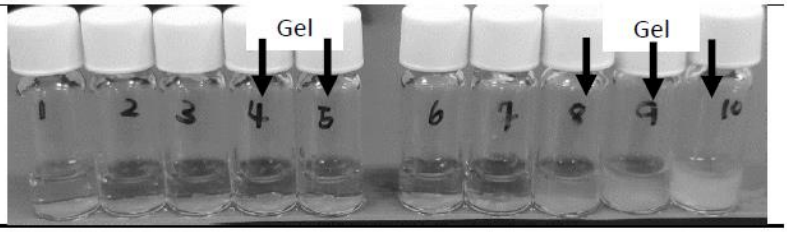
120 minutes	

Figure 3b (continued)

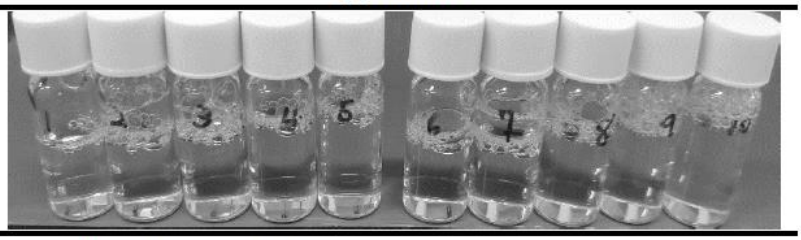
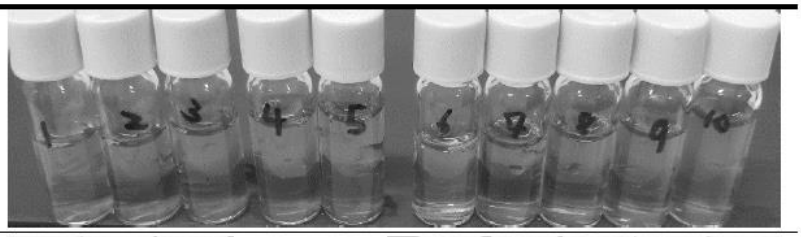
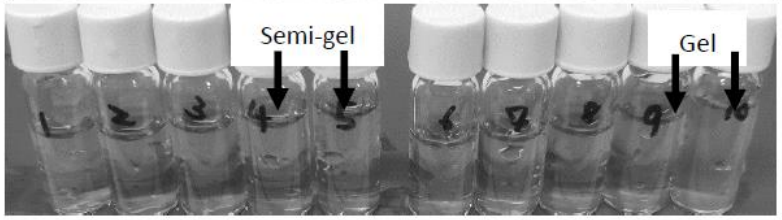
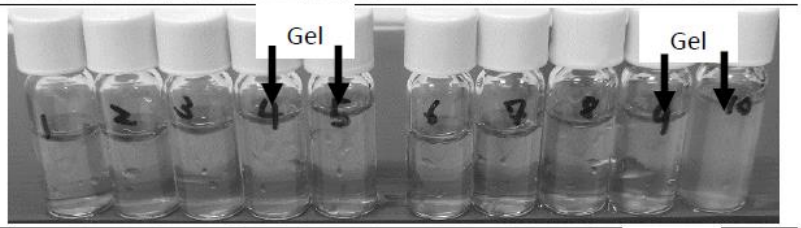
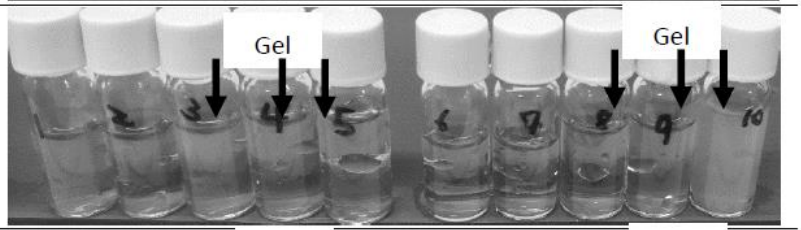
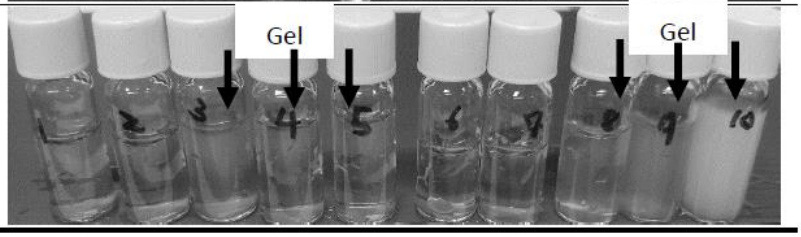
Group 3	Appearance
+ 360 mg/mL LA	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 3c

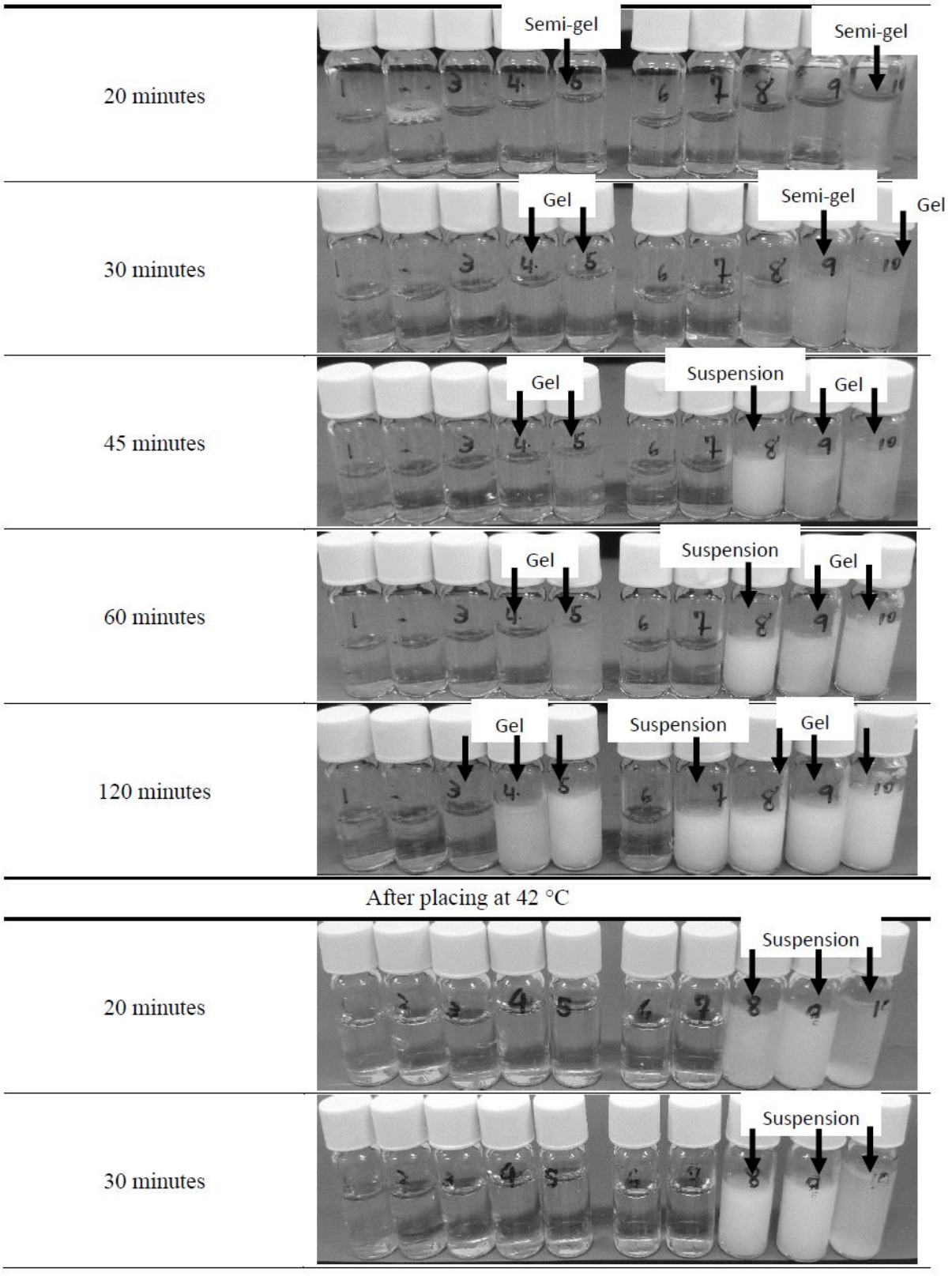


Figure 3c (continued)

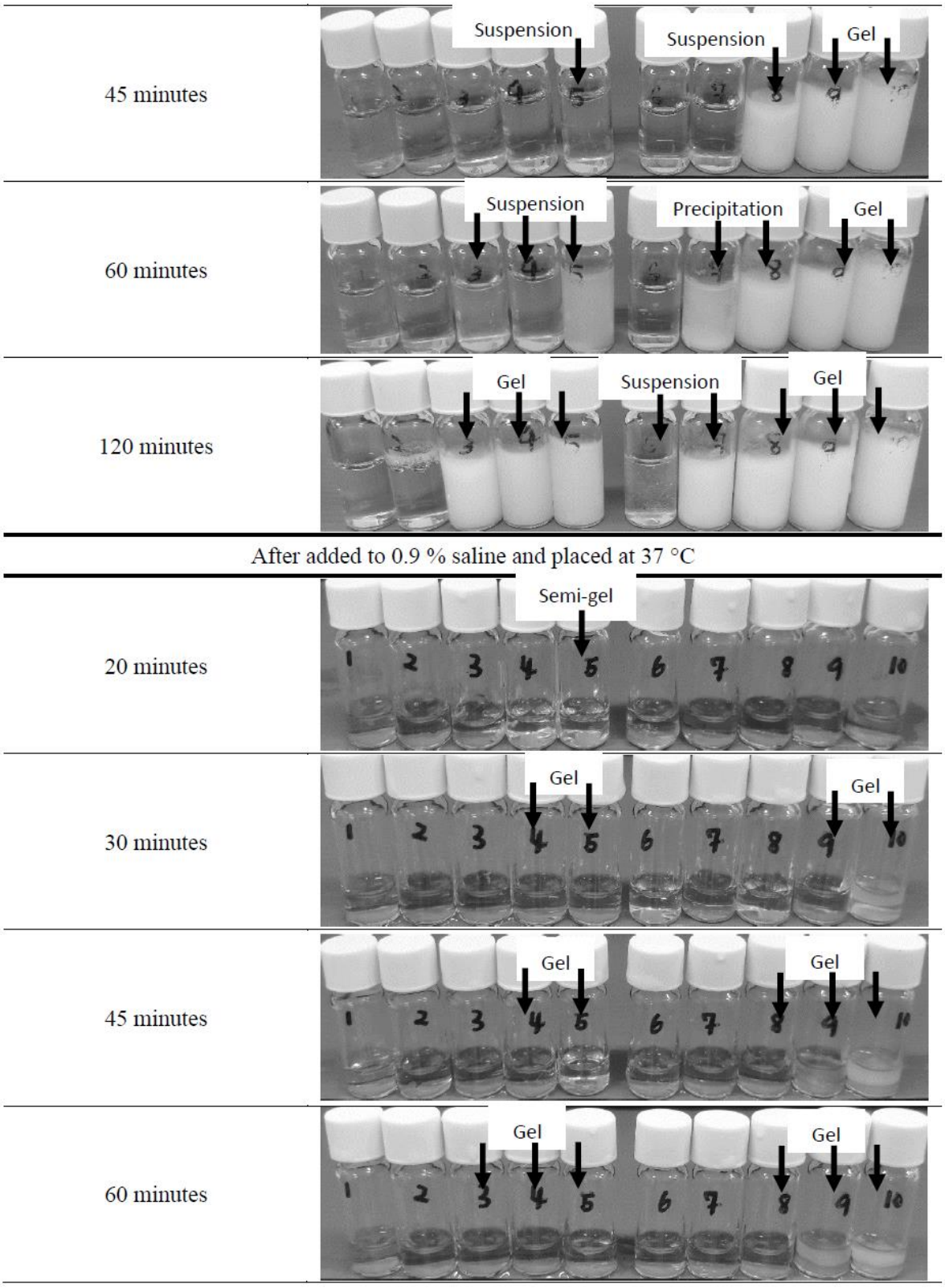


Figure 3c (continued)

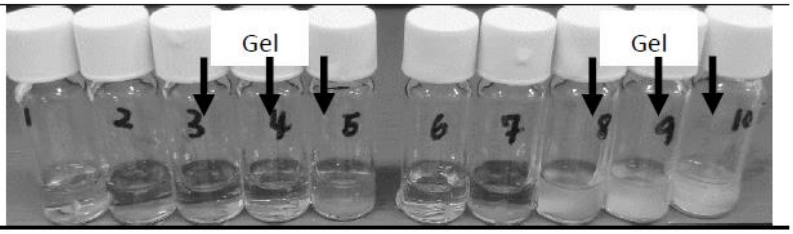
120 minutes	

Figure 3c (continued)

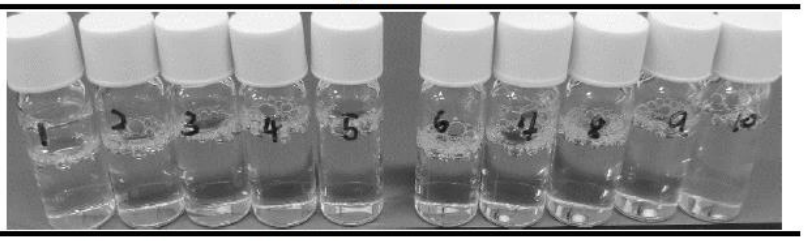
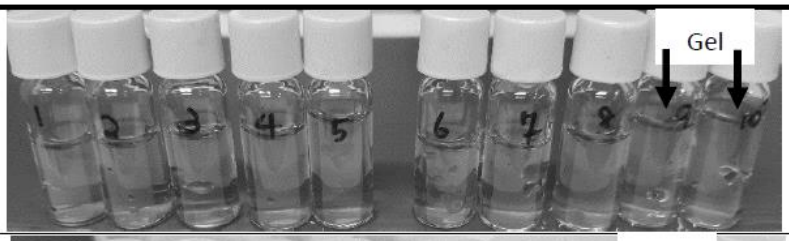
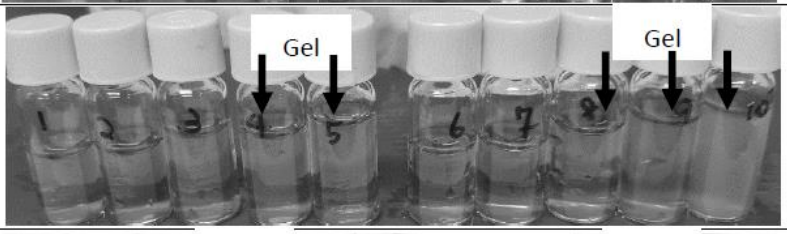
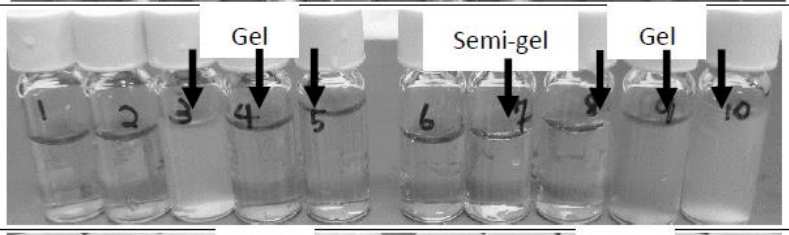
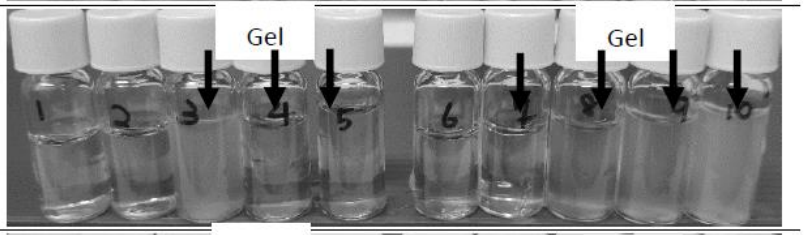
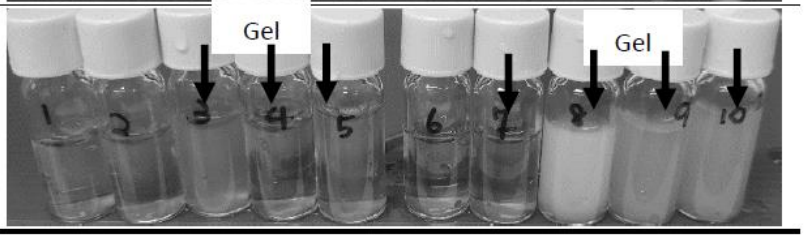
Group 4	Appearance
+ 450 mg/mL LA	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 3d

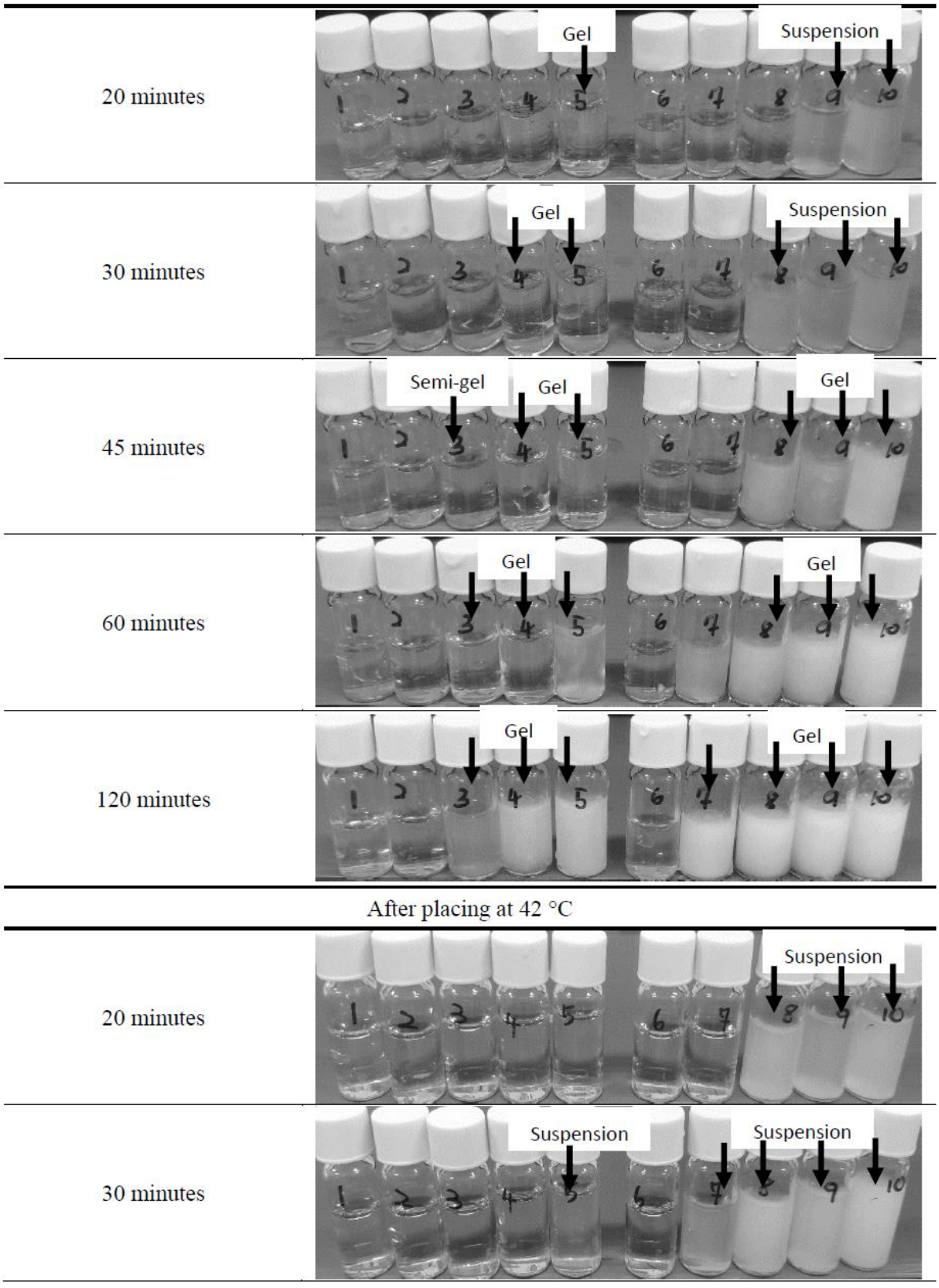


Figure 3d (continued)

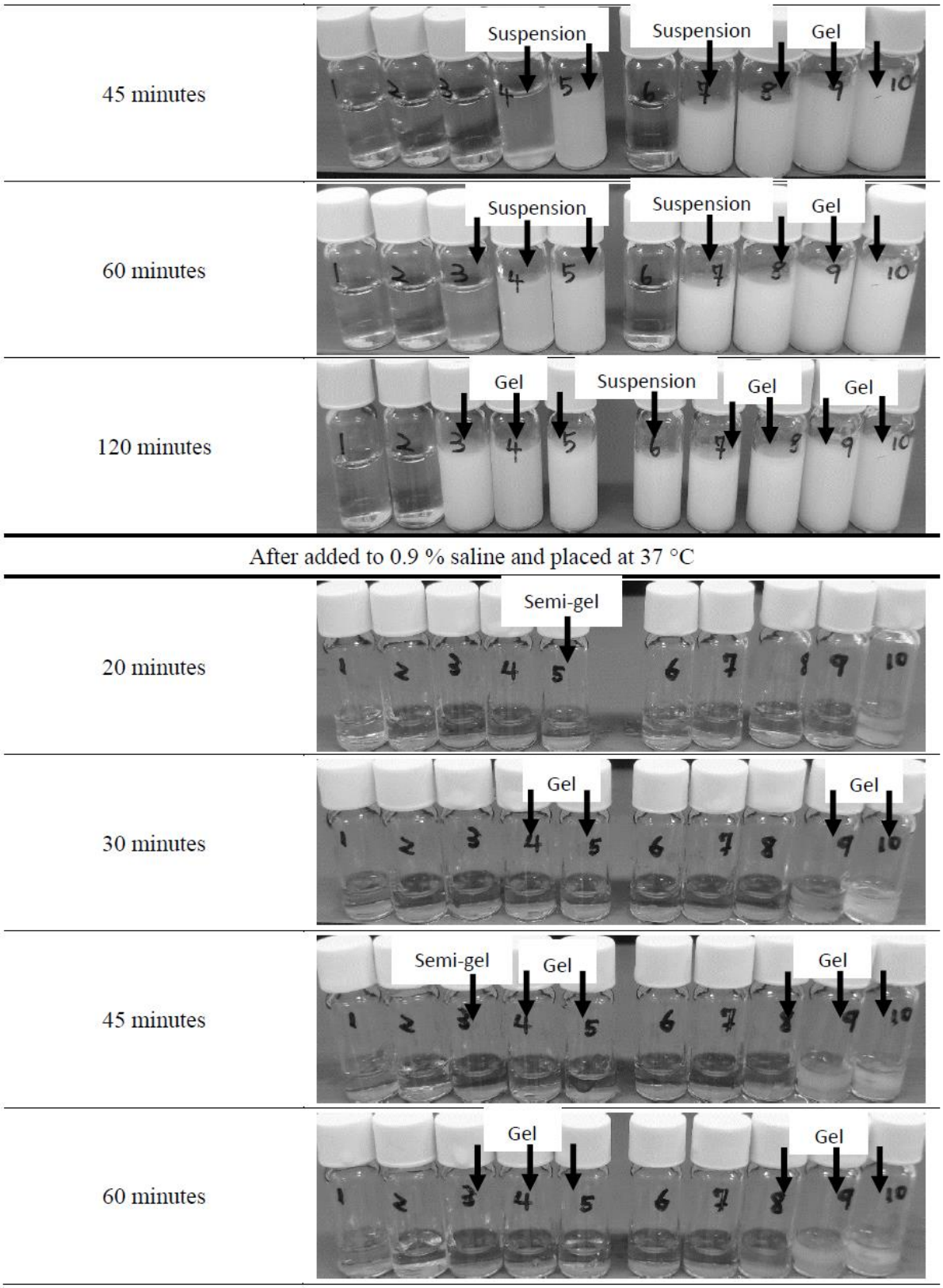


Figure 3d (continued)

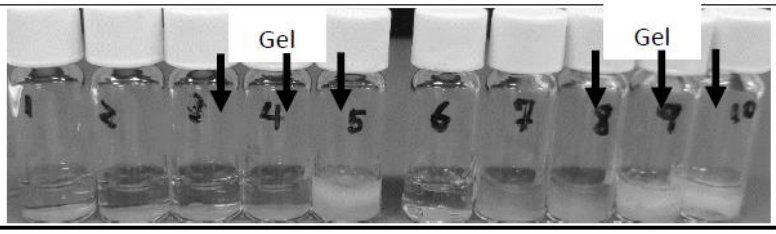
120 minutes	

Figure 3d (continued)

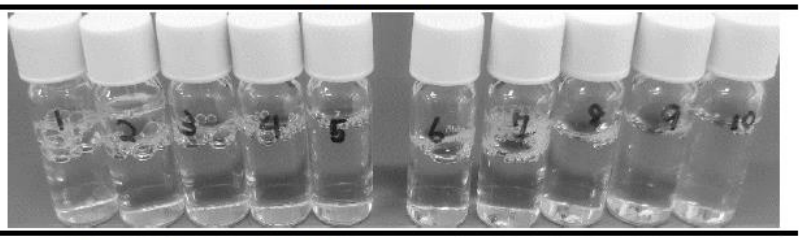
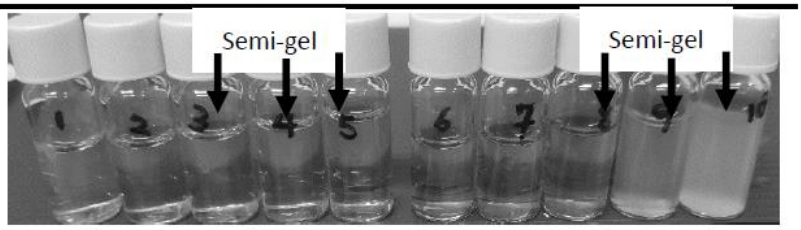
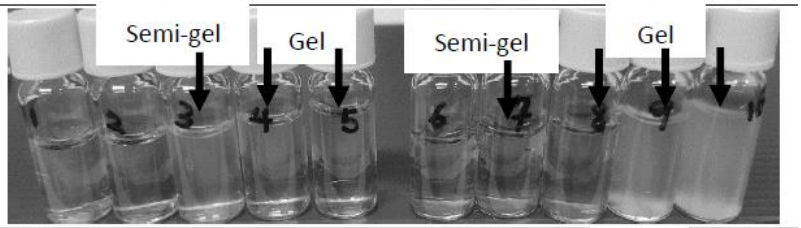
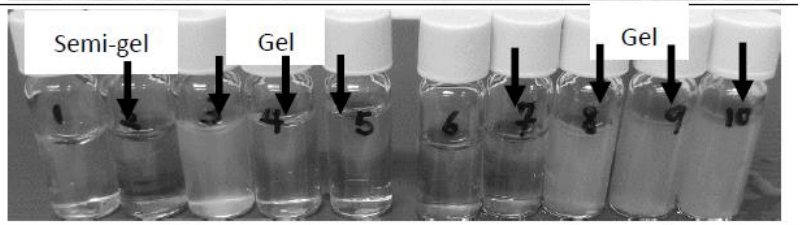
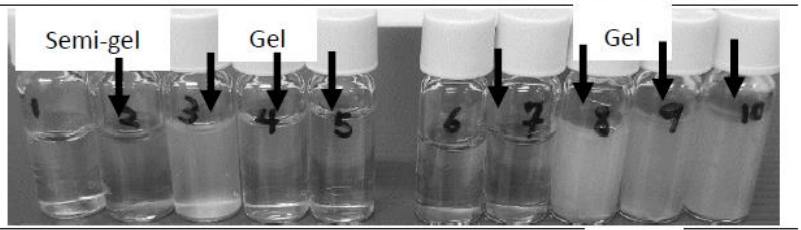
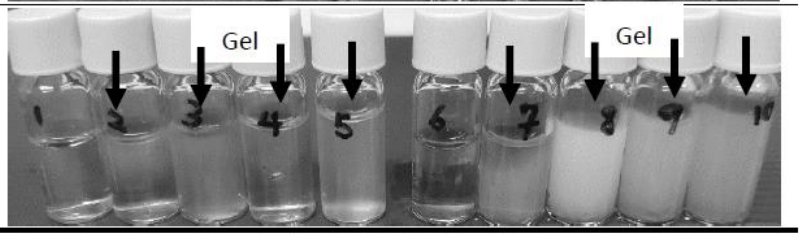
Group 5	Appearance
+ 600 mg/mL LA	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 3e

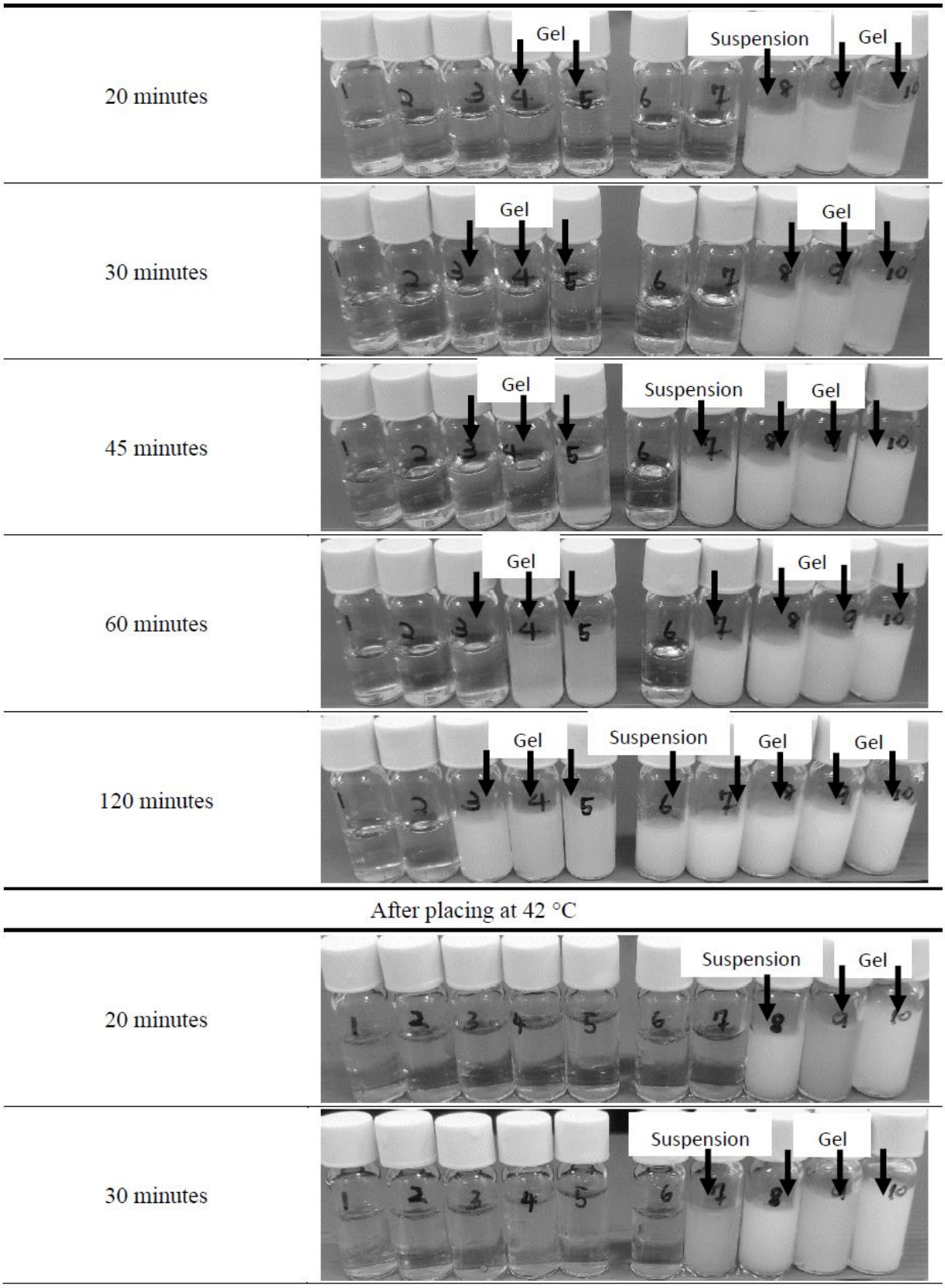


Figure 3e (continued)

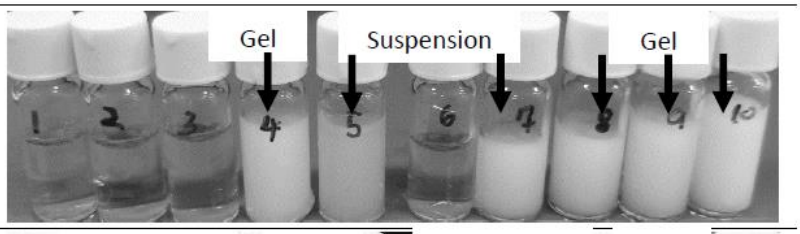
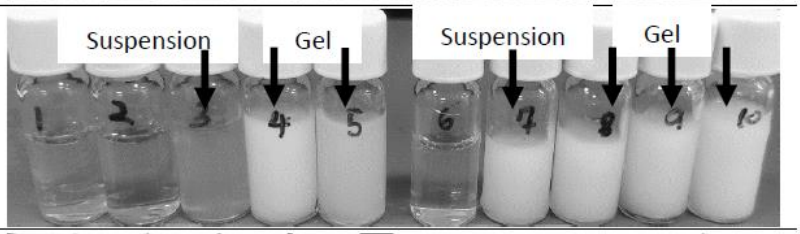
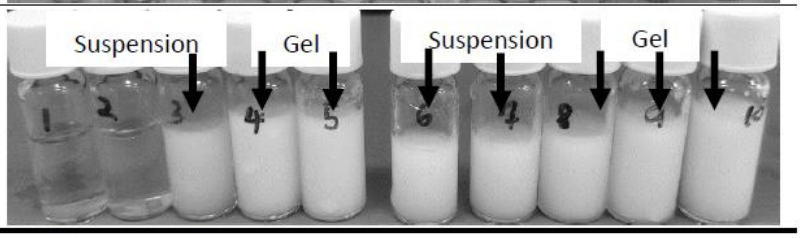
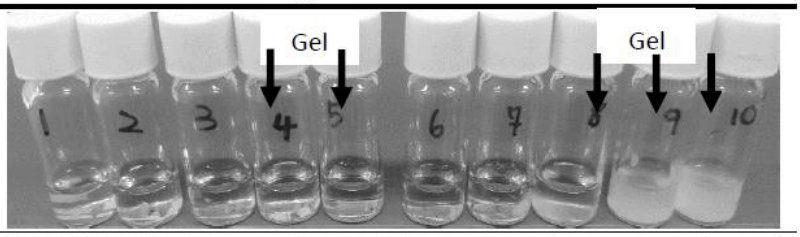
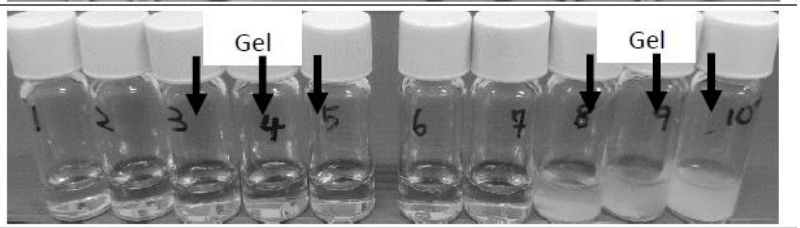
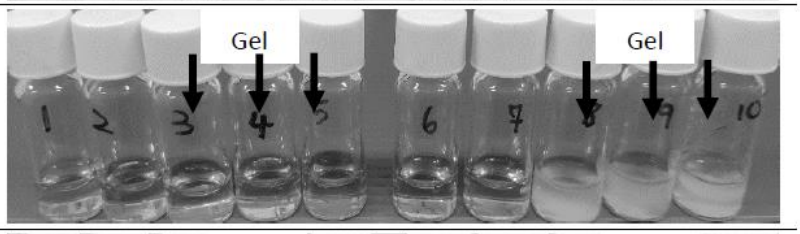
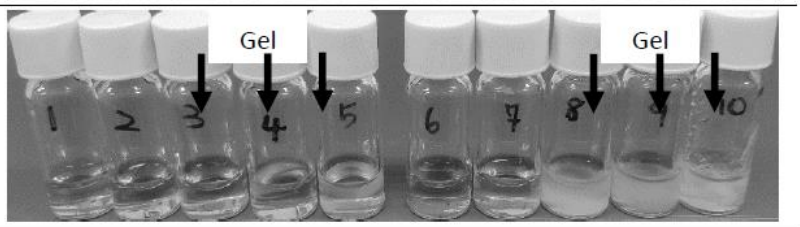
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 3e (continued)

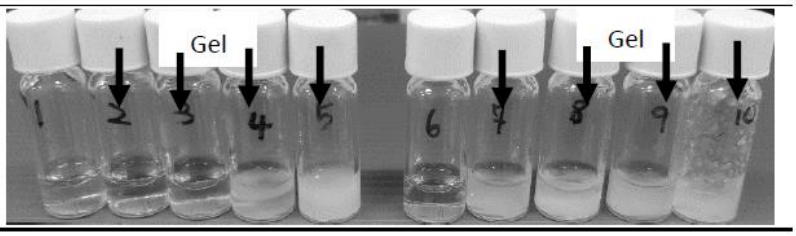
120 minutes	

Figure 3e (continued)

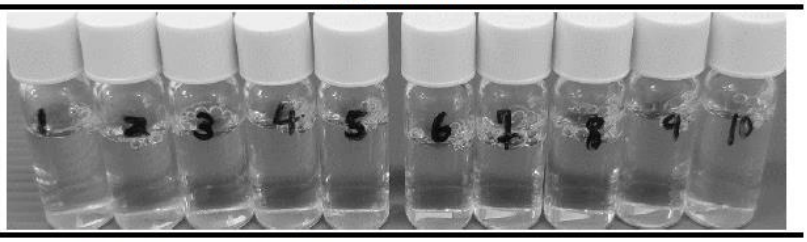
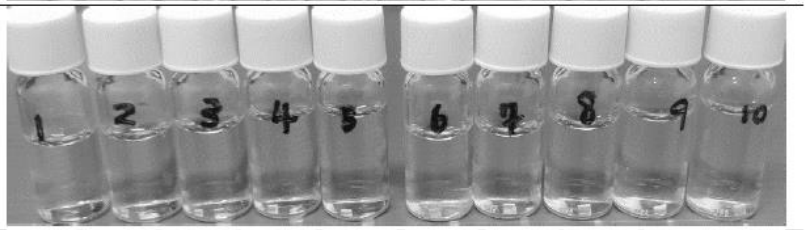
Group 1	Appearance
+ 90 mg/mL LA/lidocaine HCl	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 4a

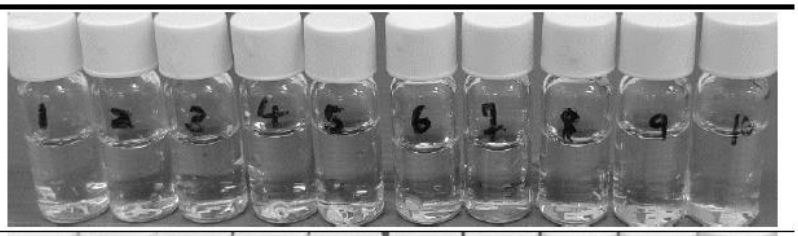
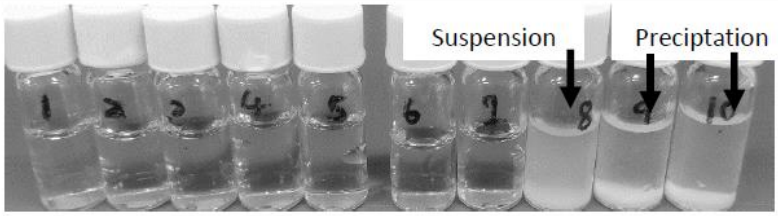
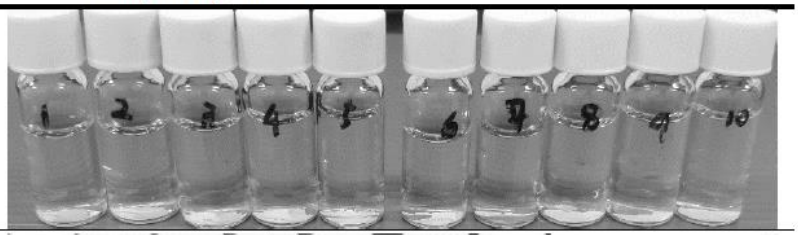
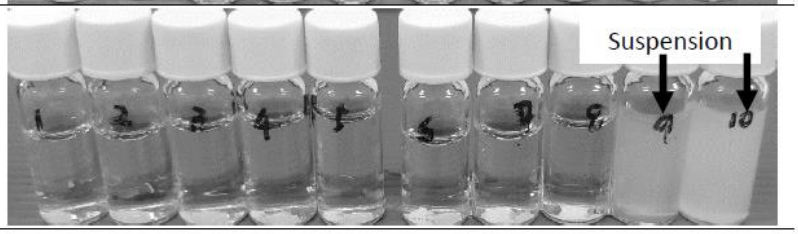
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 4a (continued)

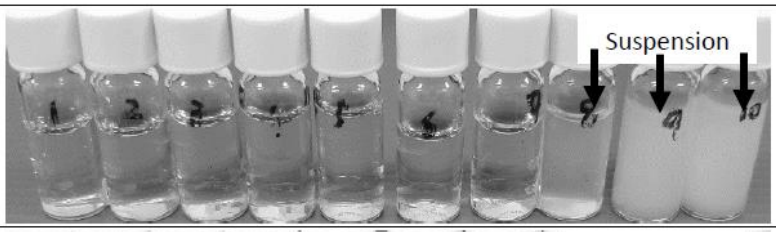
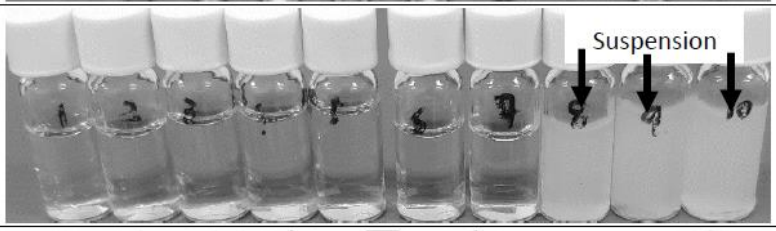
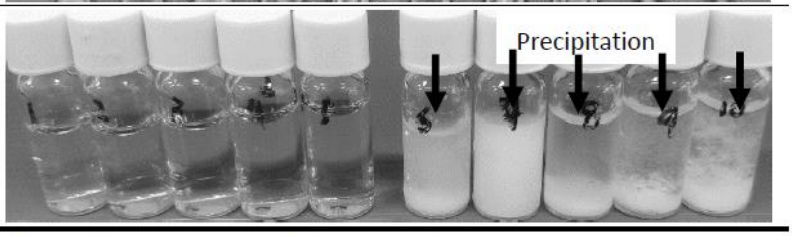
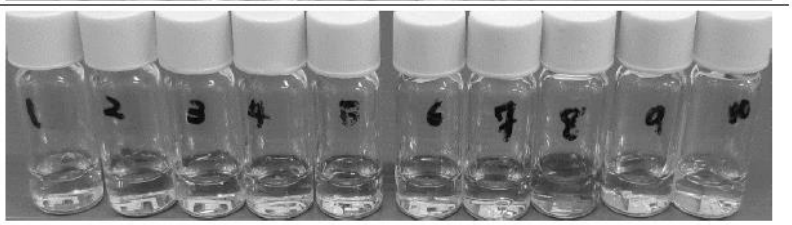
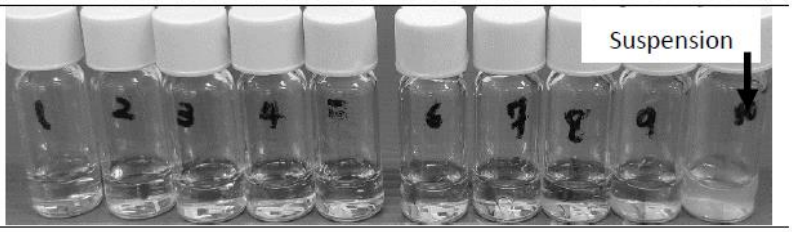
45 minutes	
60 minutes	
120 minutes	
After added to 0.9% saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 4a (continued)

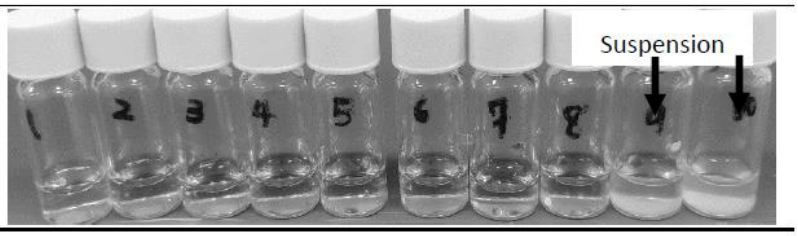
120 minutes	

Figure 4a (continued)

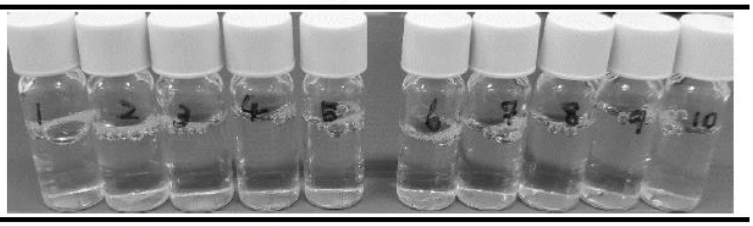
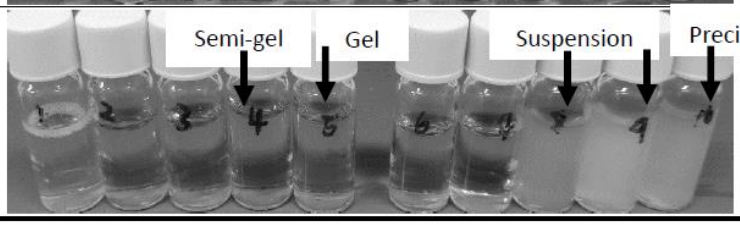
Group 2	Appearance
+ 180 mg/mL LA/lidocaine HCl	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 4b

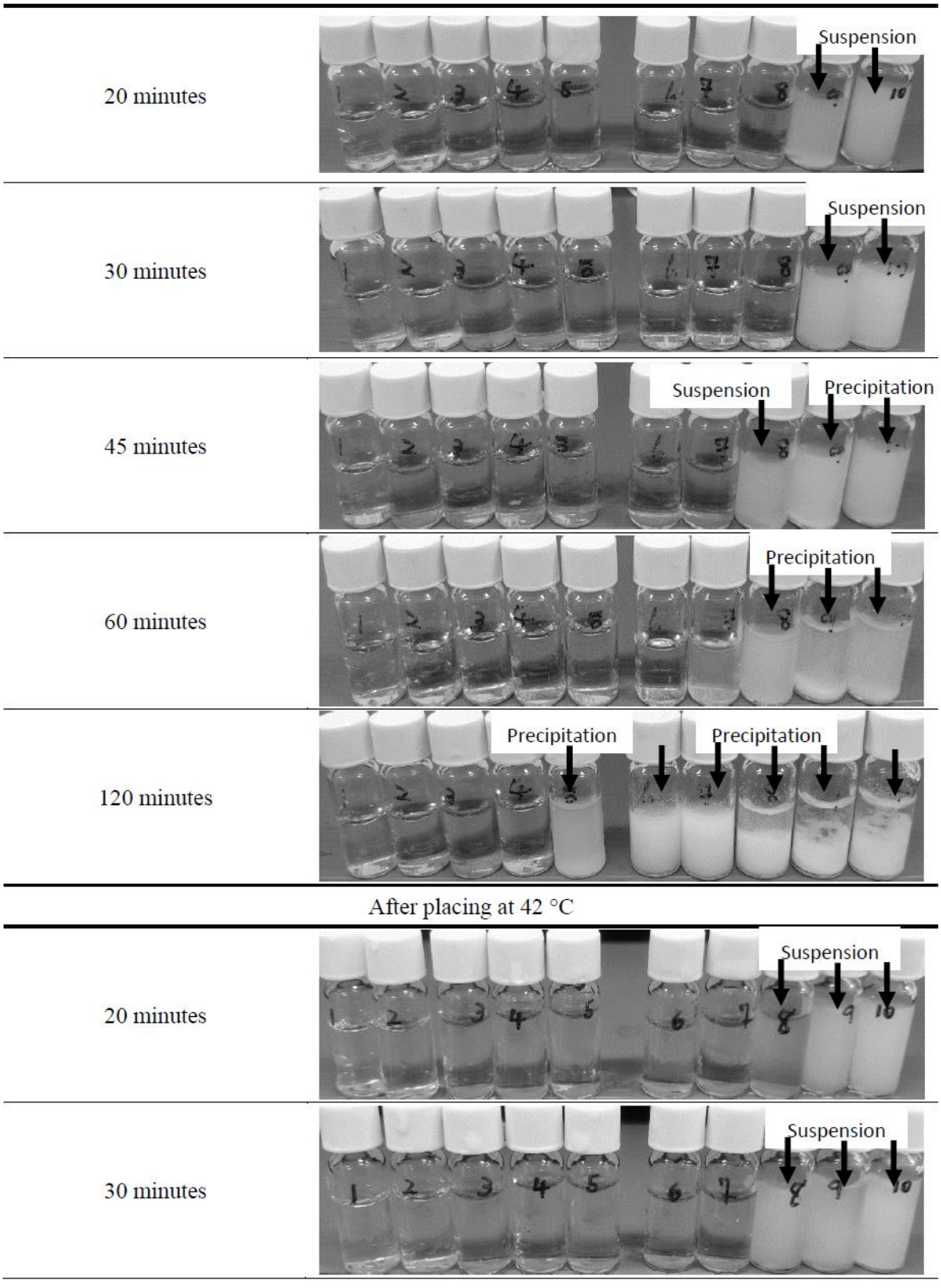


Figure 4b (continued)

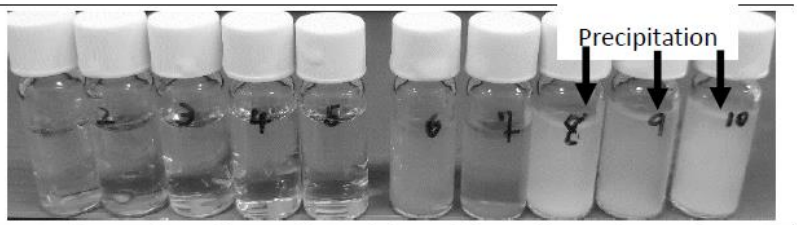
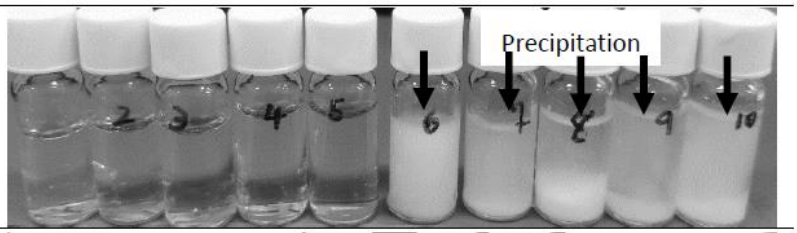
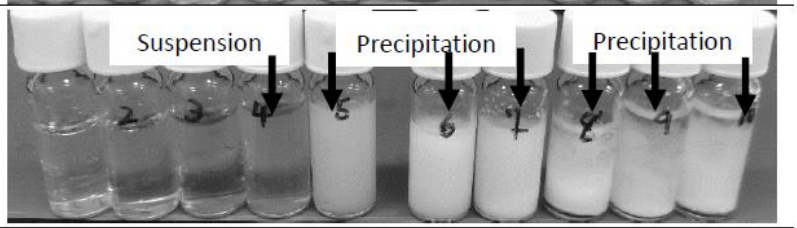
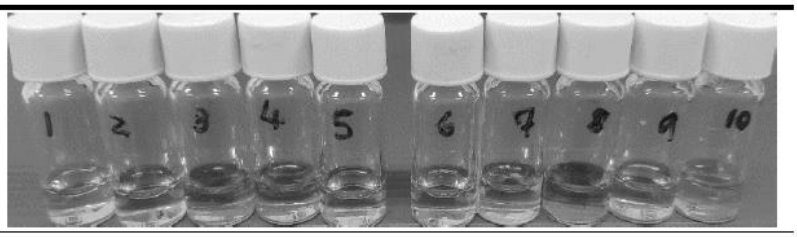
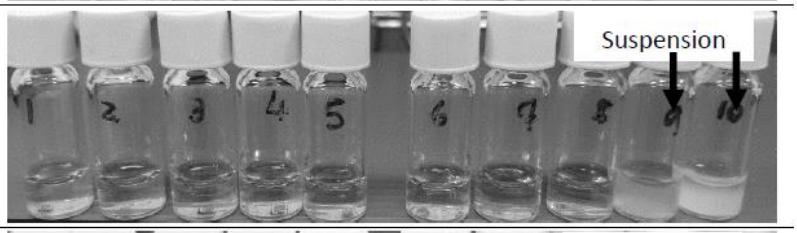
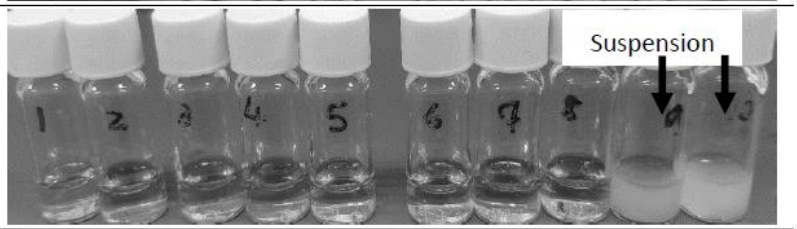
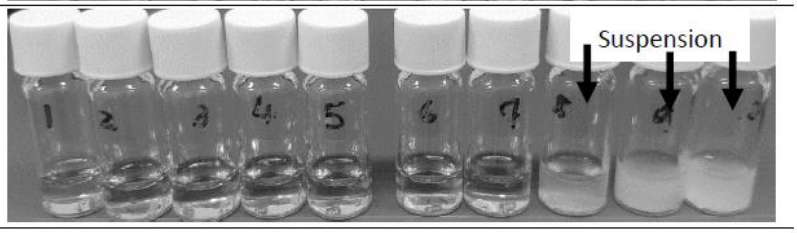
45 minutes	
60 minutes	
120 minutes	
After added to 0.9% saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 4b (continued)

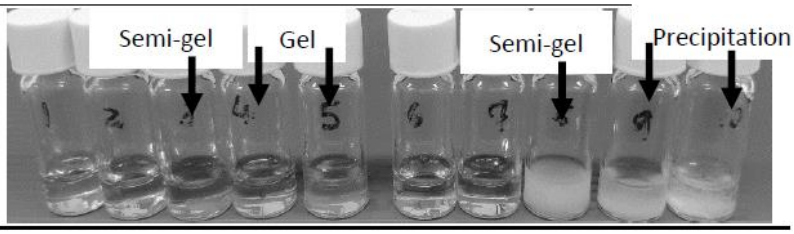
120 minutes	

Figure 4b (continued)

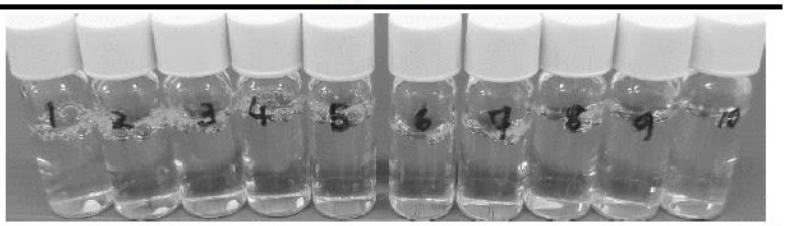
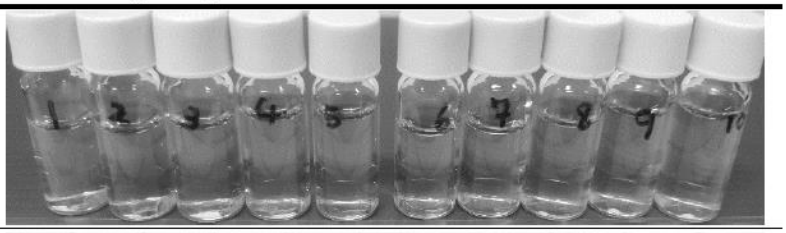
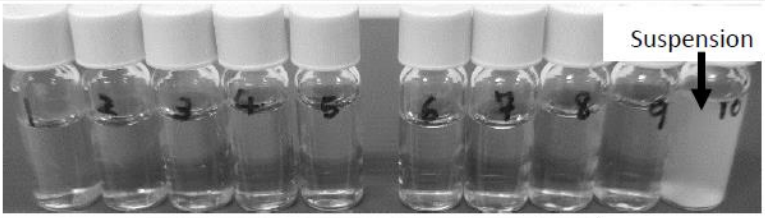
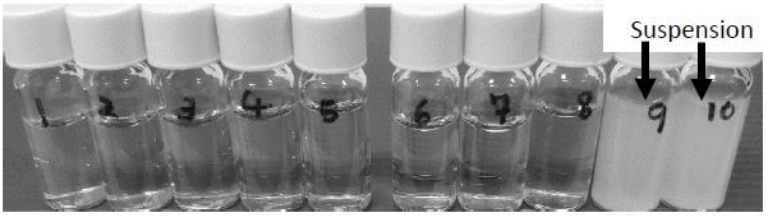
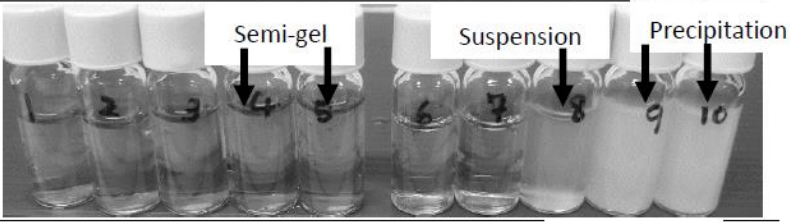
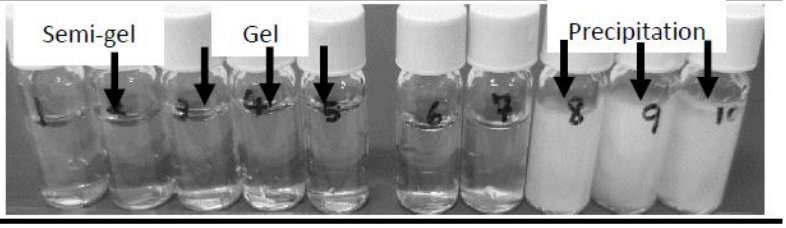
Group 3	Appearance
+ 300 mg/mL LA/lidocaine HCl	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 4c

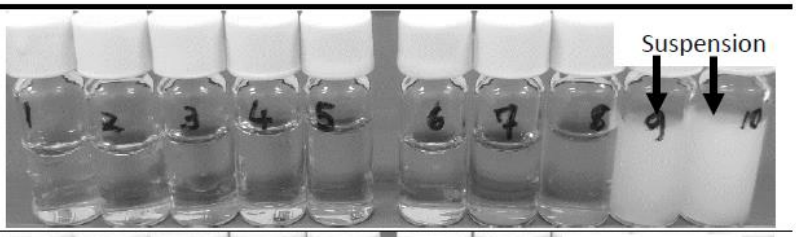
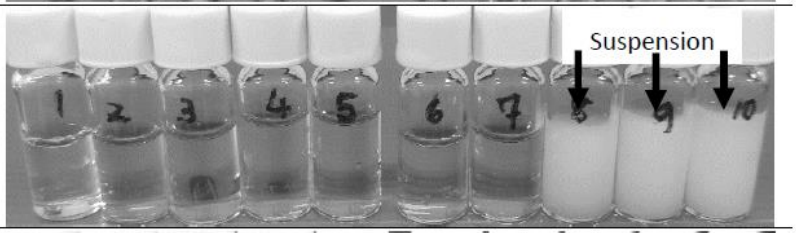
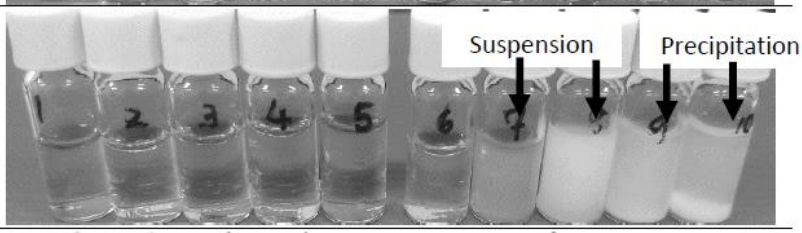
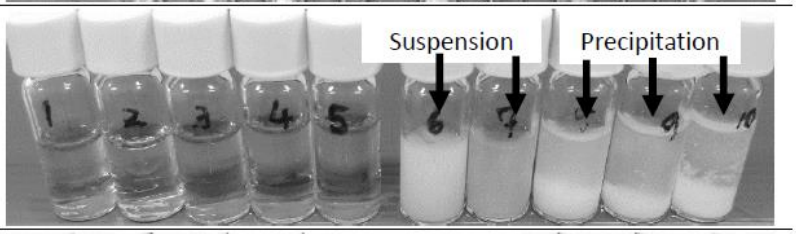
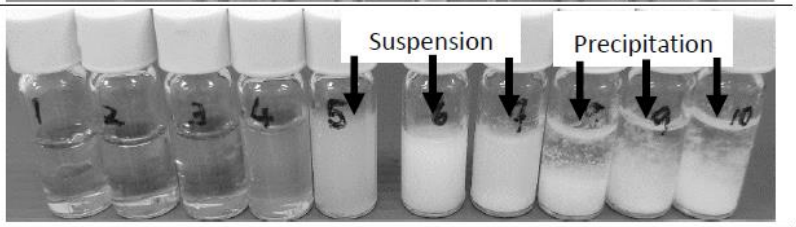
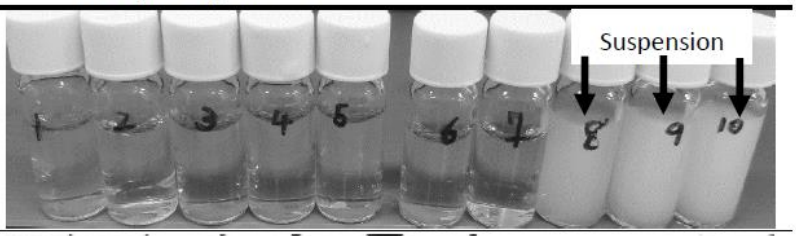
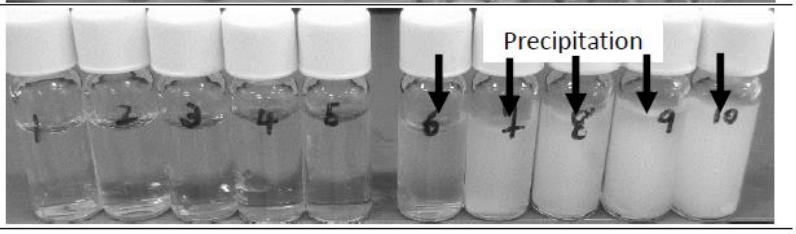
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 4c (continued)

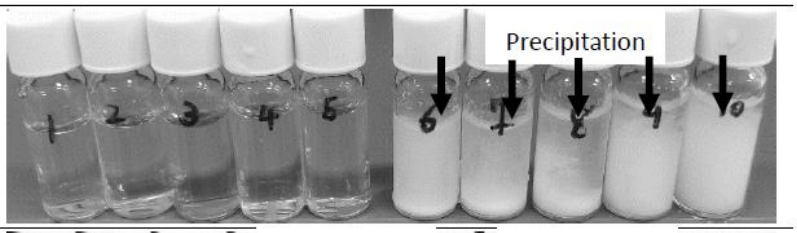
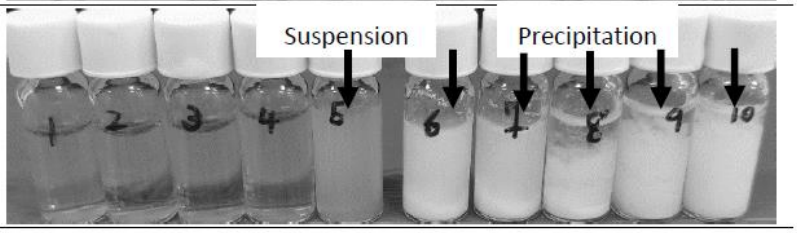
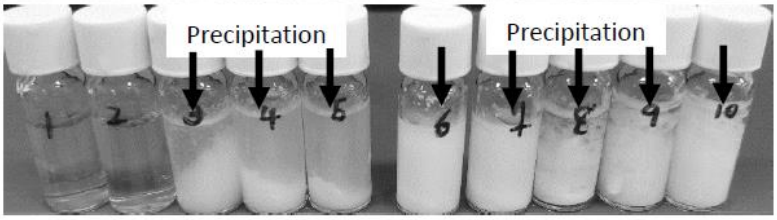
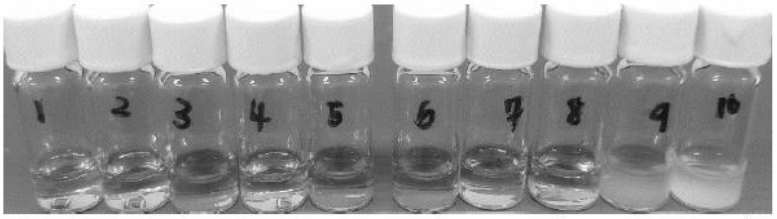
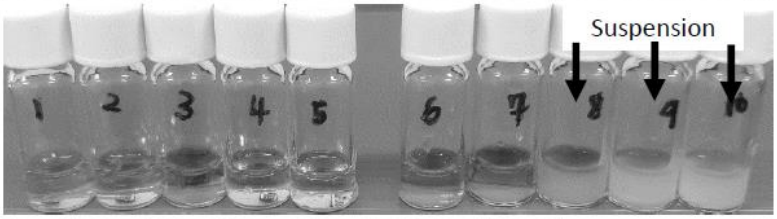
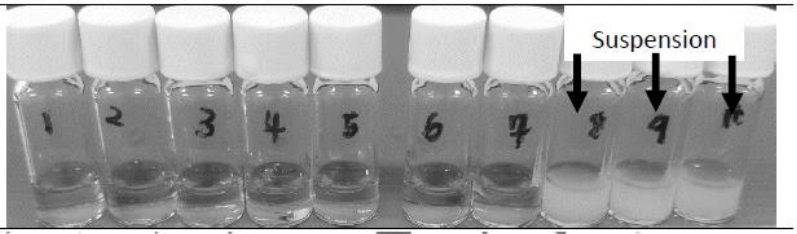
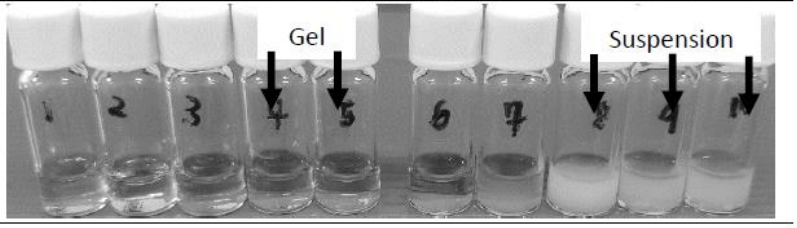
45 minutes	
60 minutes	
120 minutes	
After added to 0.9% saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 4c (continued)

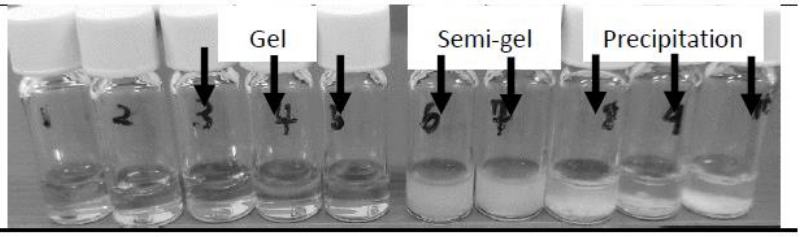
120 minutes	

Figure 4c (continued)

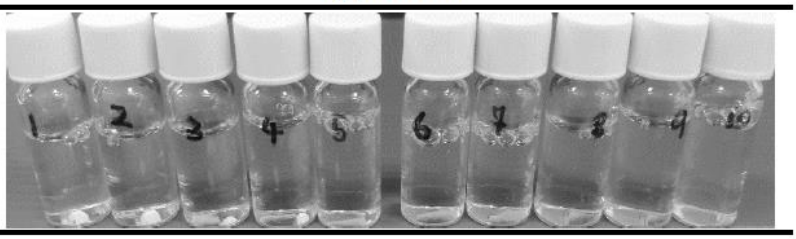
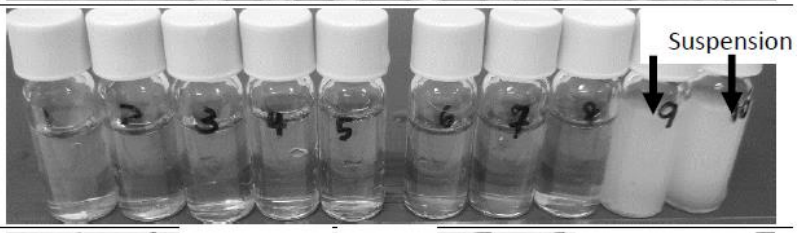
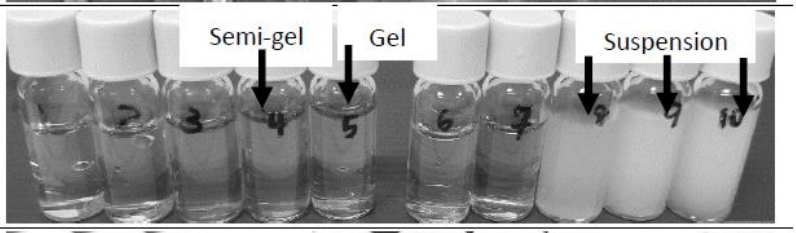
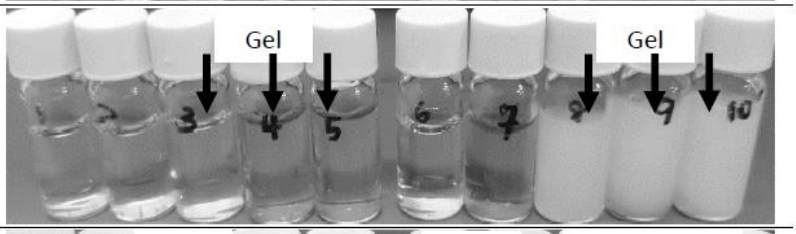
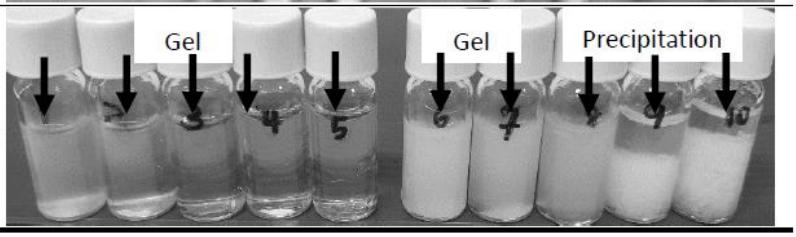
Group 4	Appearance
+ 450 mg/mL LA/lidocaine HCl	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 4d

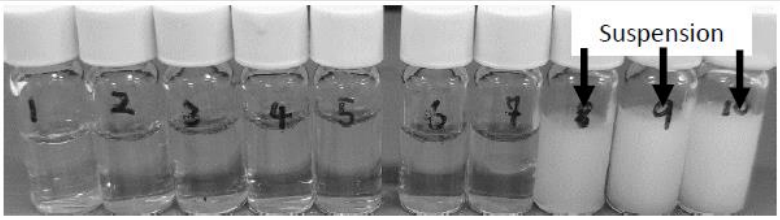
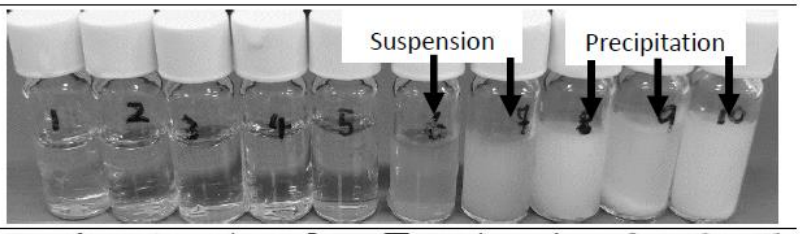
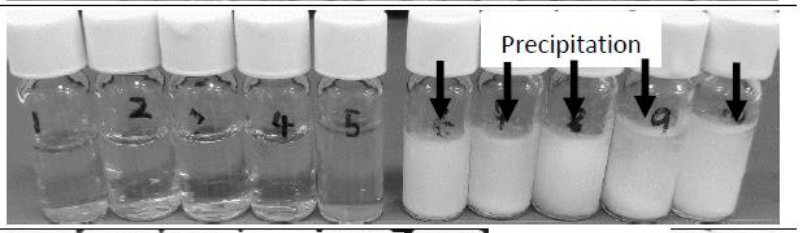
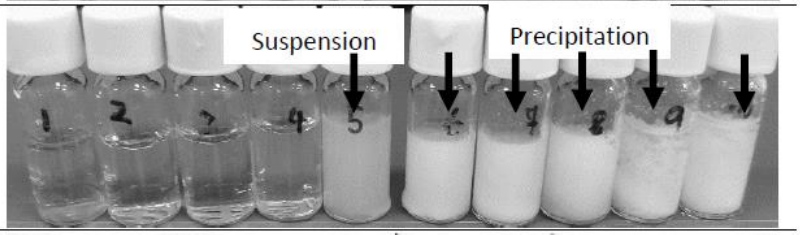
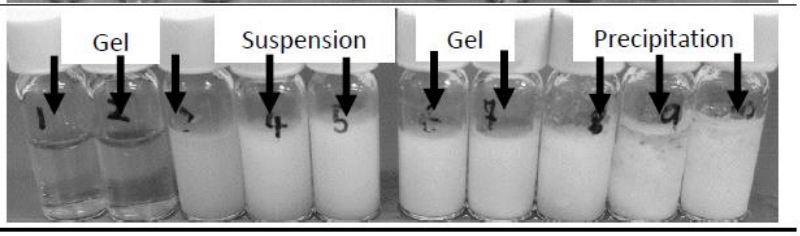
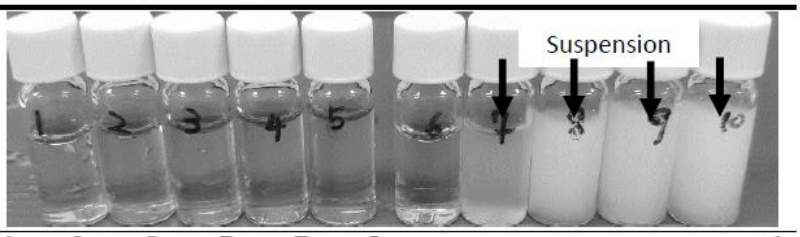
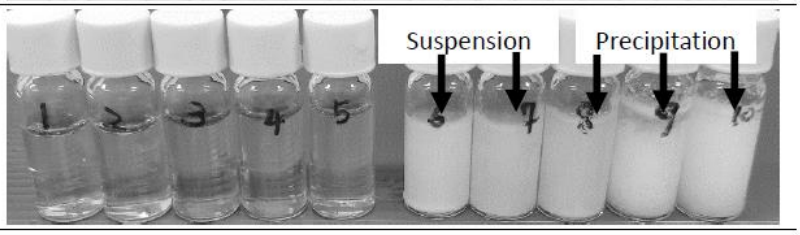
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 4d (continued)

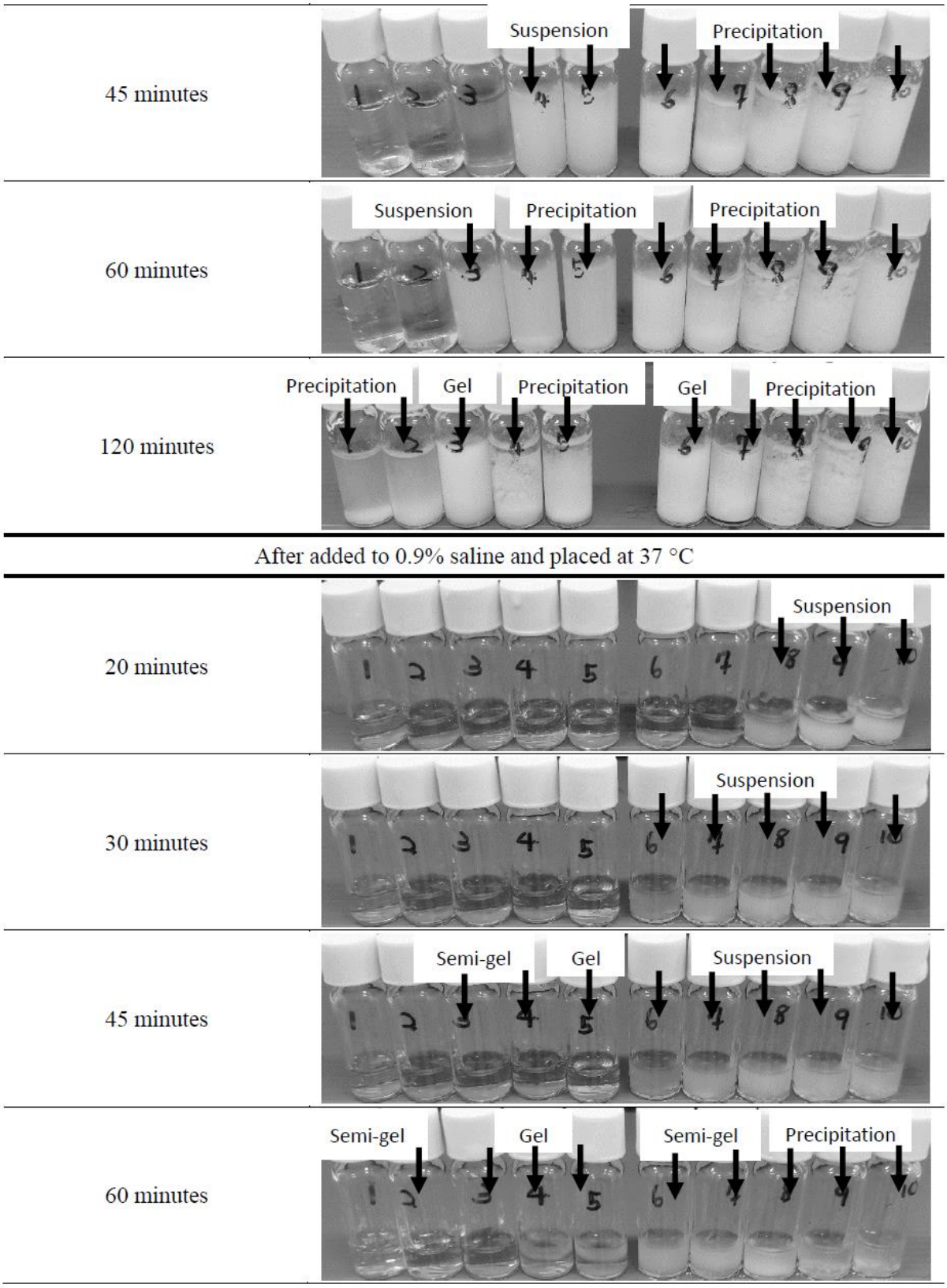


Figure 4d (continued)

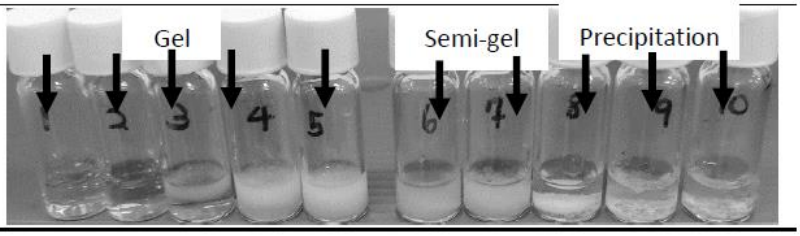
120 minutes	

Figure 4d (continued)

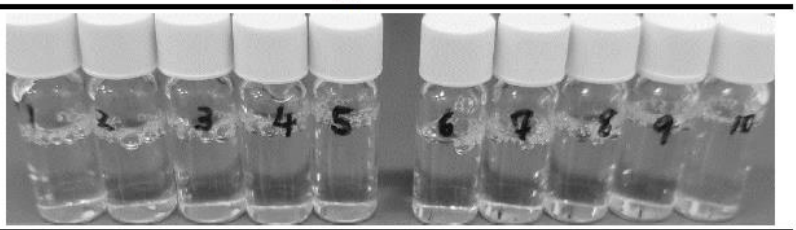
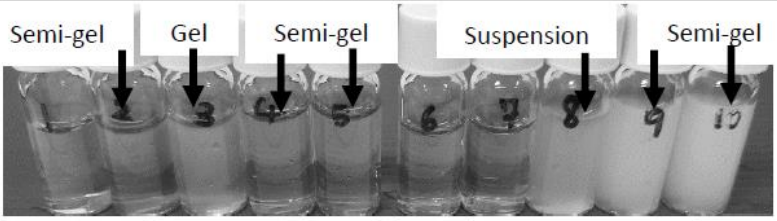
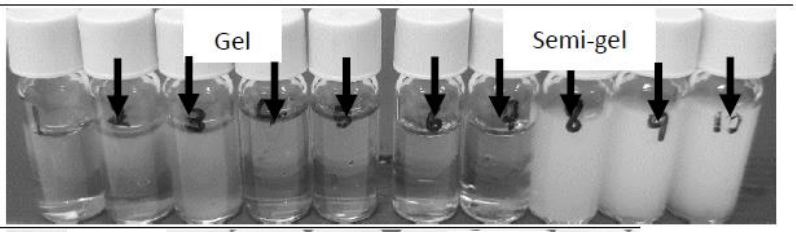
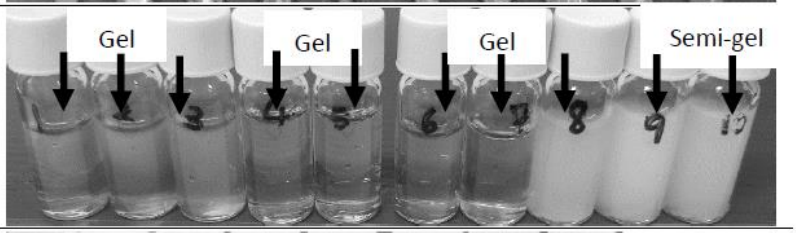
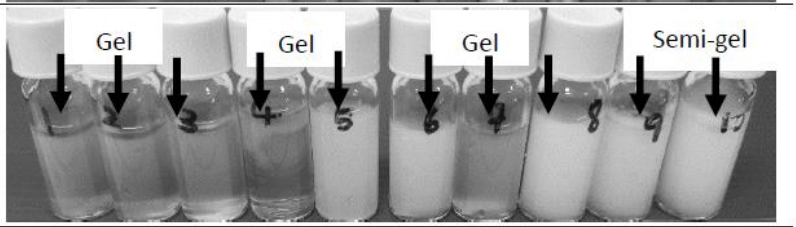
Group 5	Appearance
+ 600 mg/mL LA/lidocaine HCl	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 4e

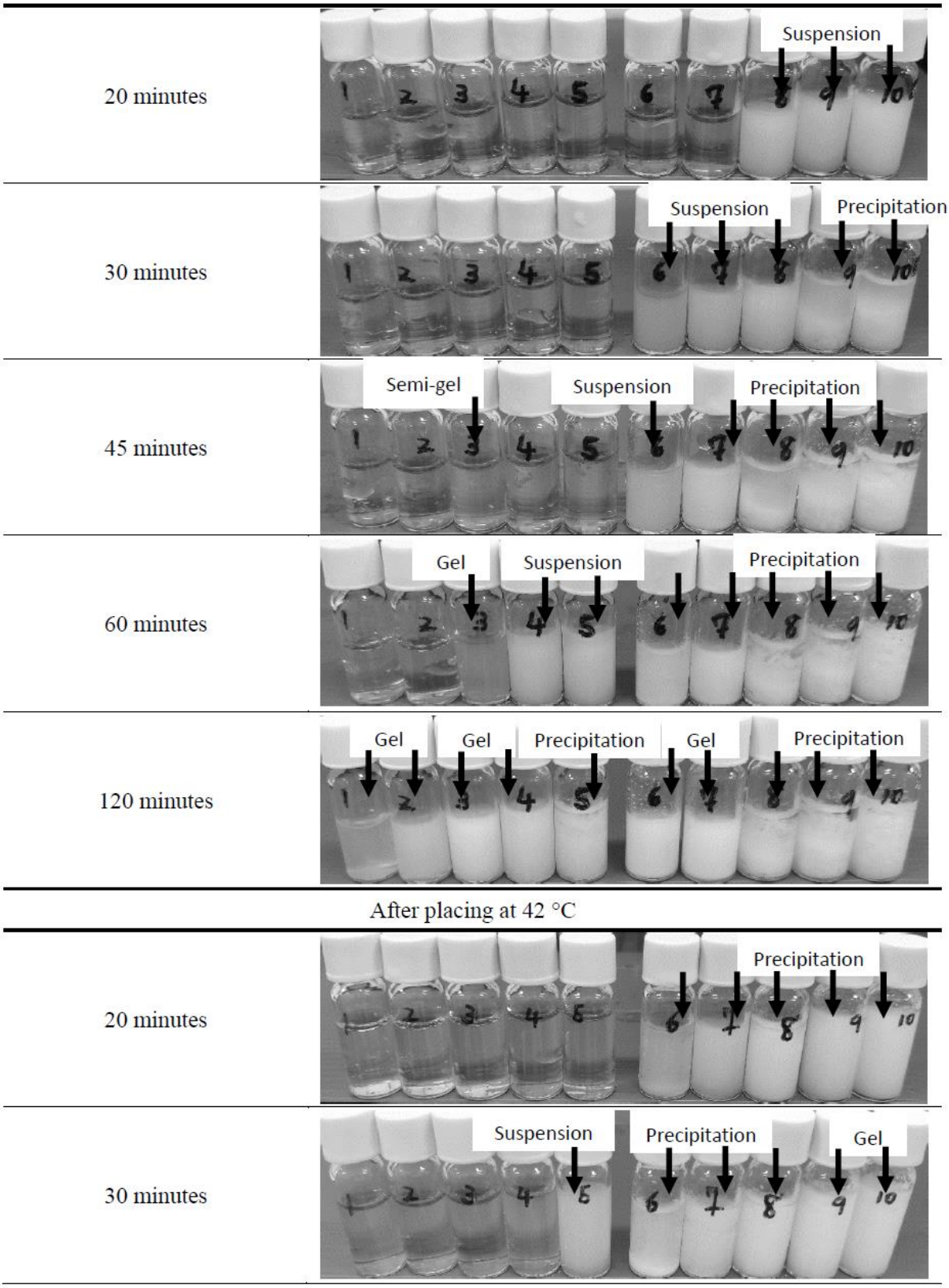


Figure 4e (continued)

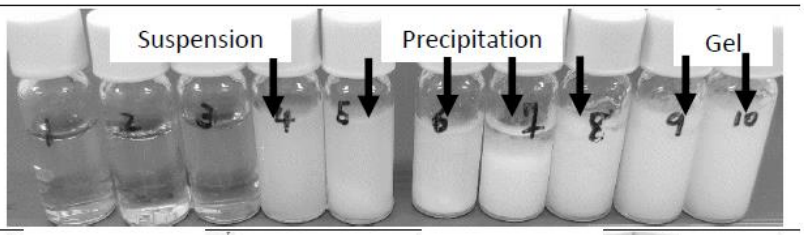
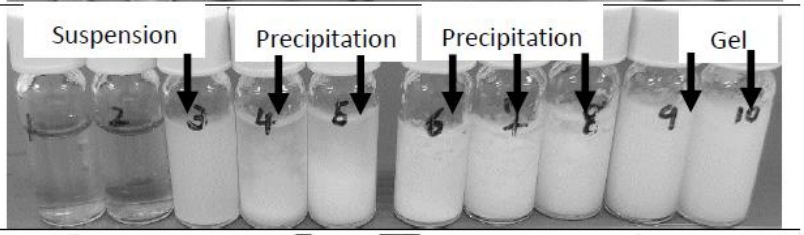
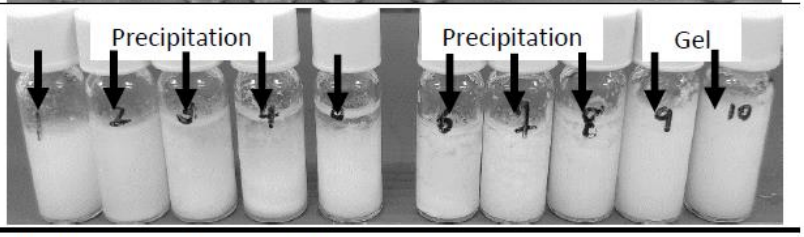
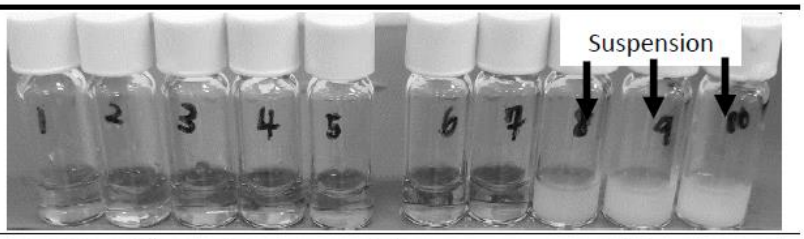
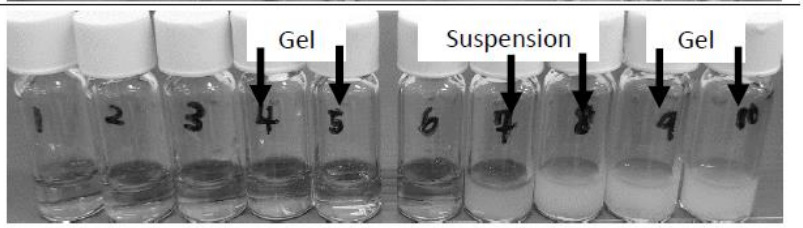
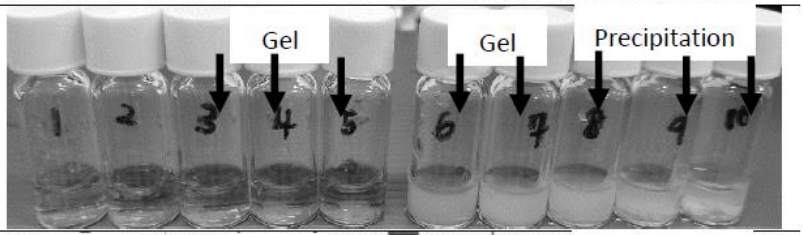
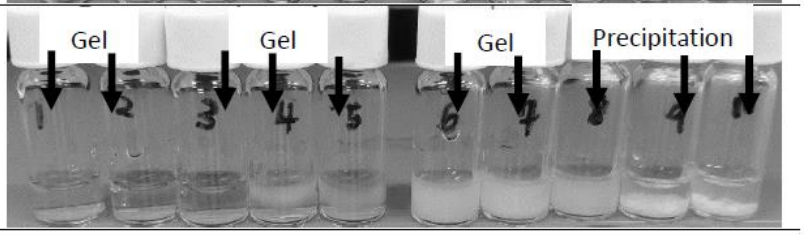
45 minutes	
60 minutes	
120 minutes	
After added to 0.9% saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 4e (continued)

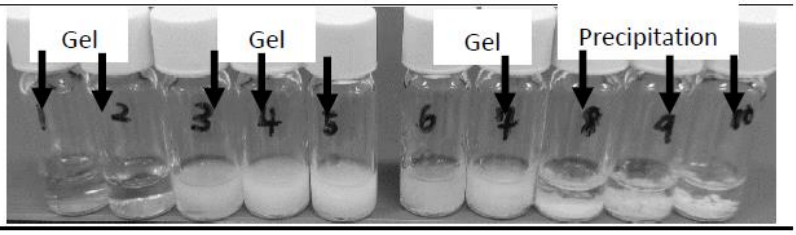
120 minutes	

Figure 4e (continued)



FIG. 5a



FIG. 5b



FIG. 5c



FIG. 5d

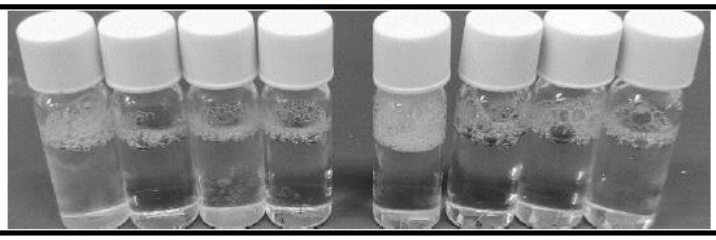
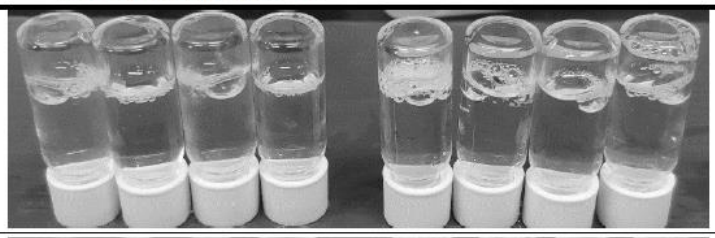
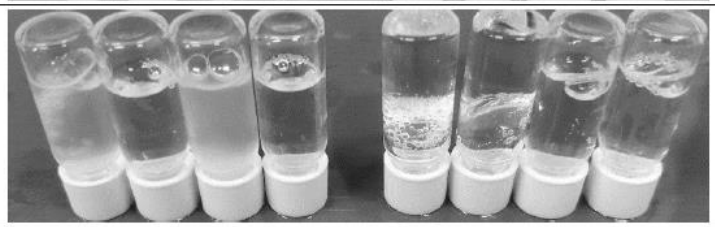
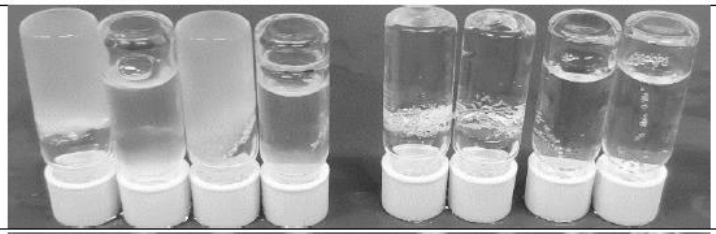
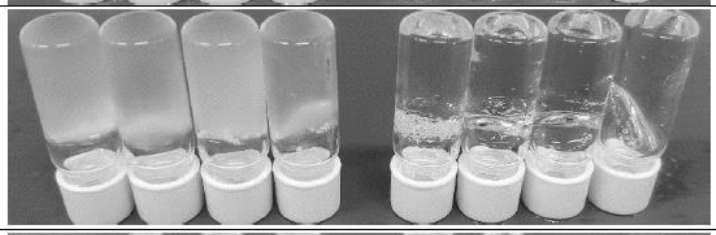
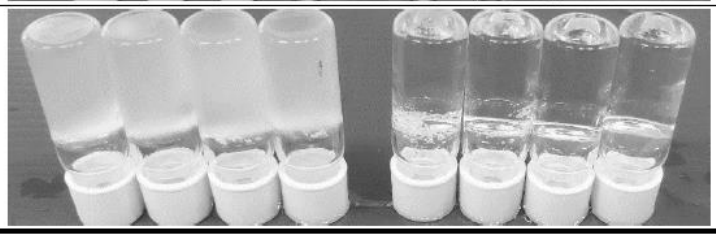
Group 1	Appearance
+ L-lysine (200 mg/mL)/ DSP solution	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 6a

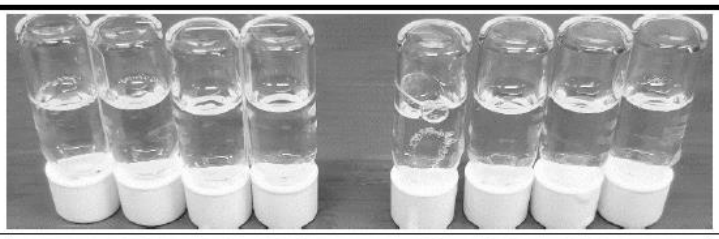
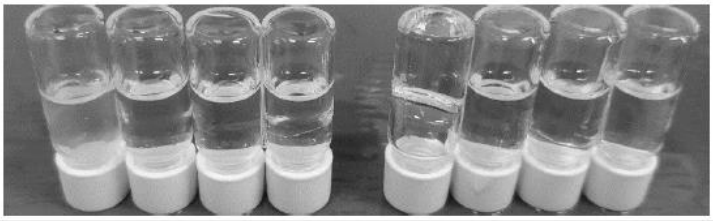
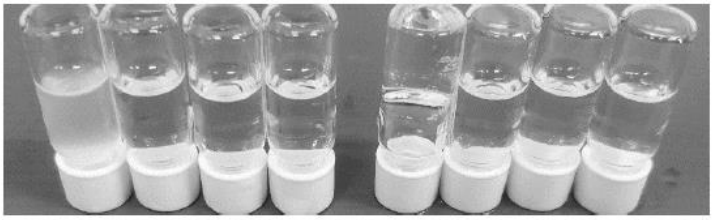
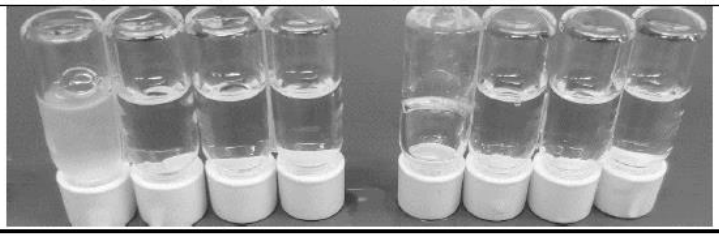
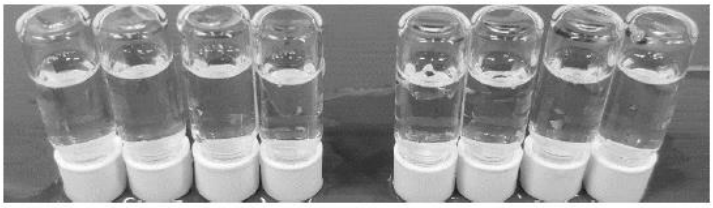
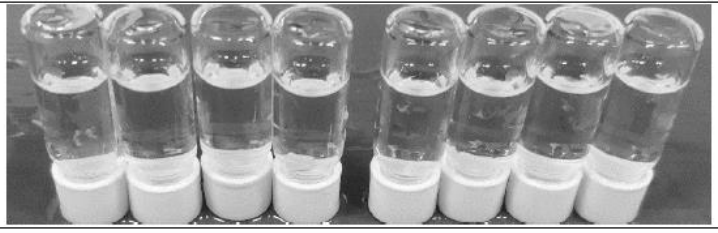
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 6a (continued)

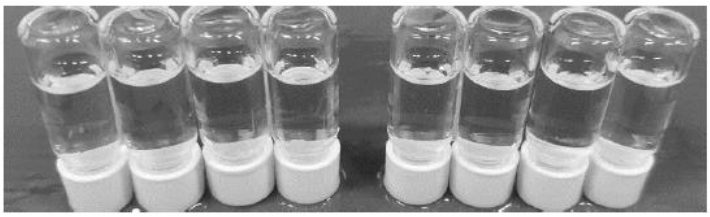
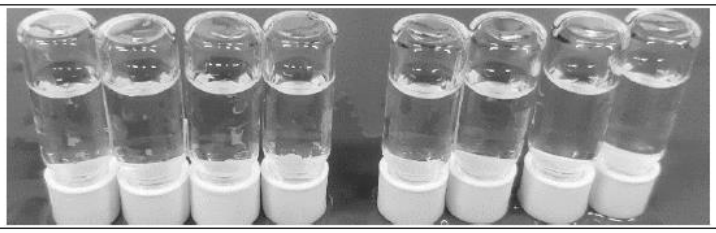
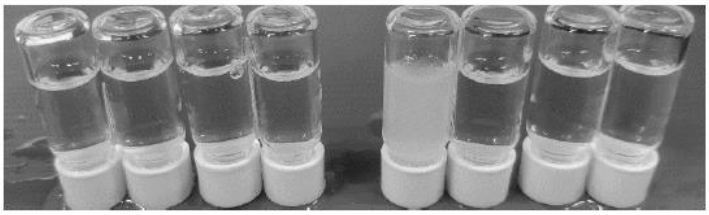
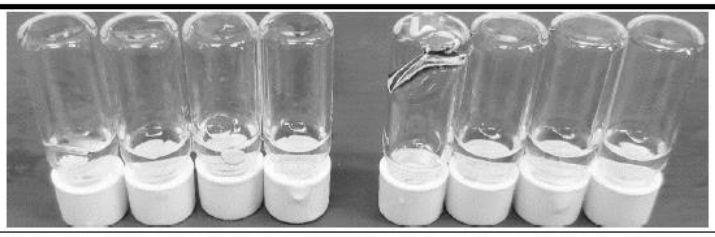
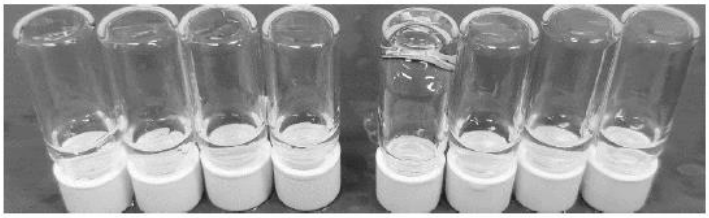
45 minutes	
60 minutes	
120 minutes	
After added to 0.9% saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 6a (continued)

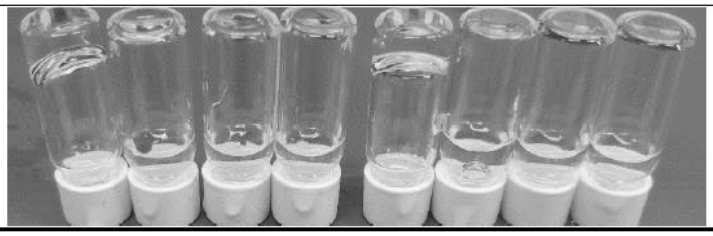
120 minutes	

Figure 6a (continued)

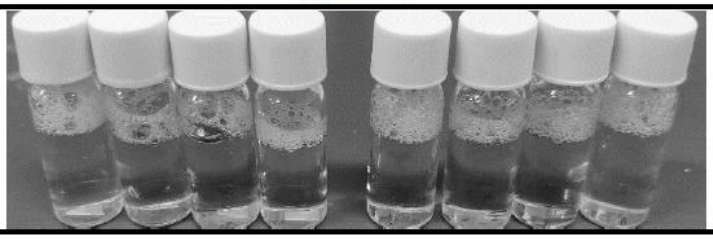
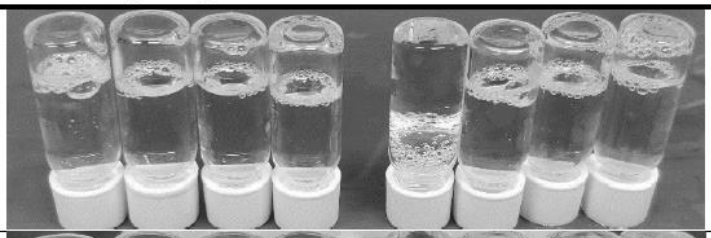
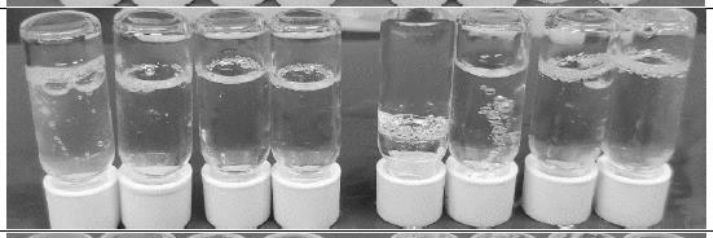
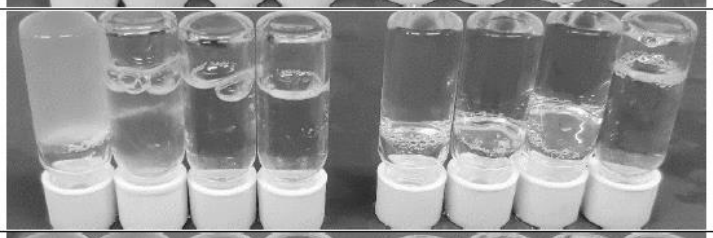
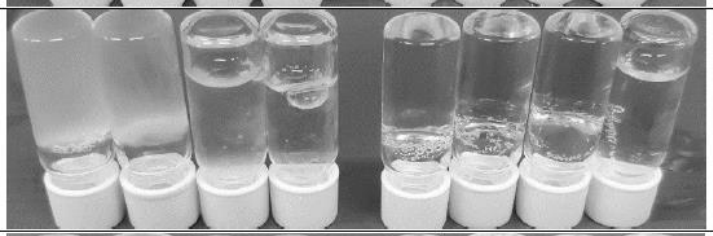
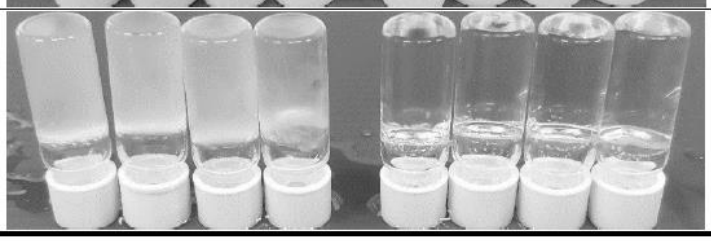
Group 2	Appearance
+ L-lysine (400 mg/mL)/ DSP solution	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 6b

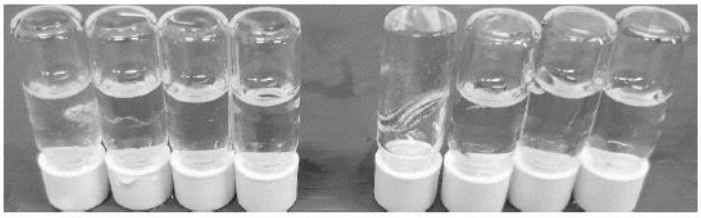
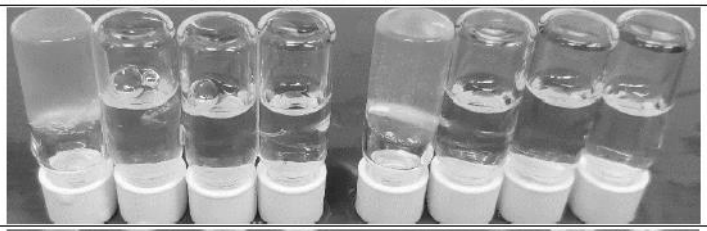
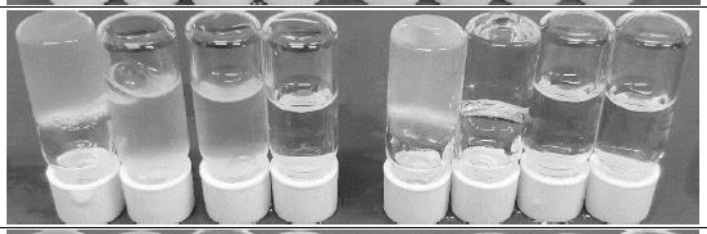
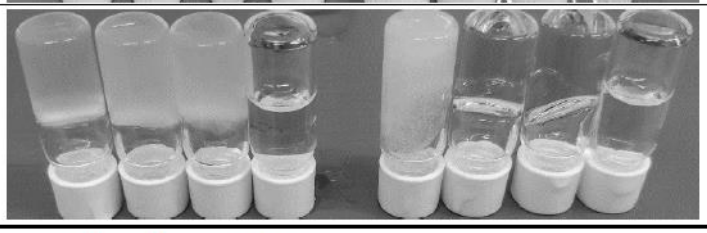
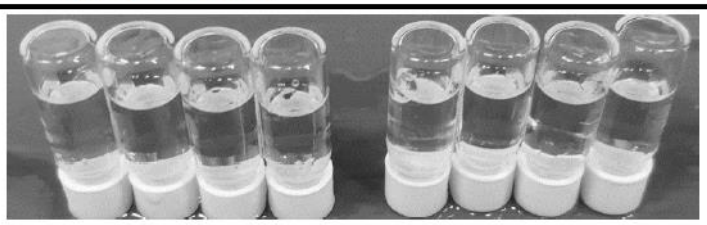
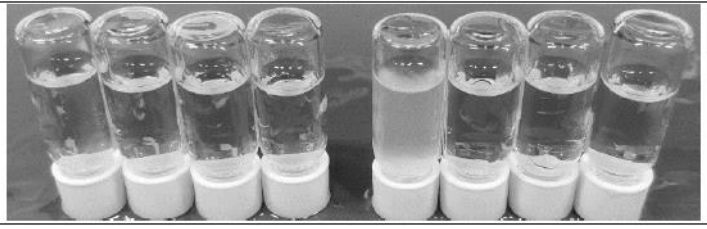
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 6b (continued)

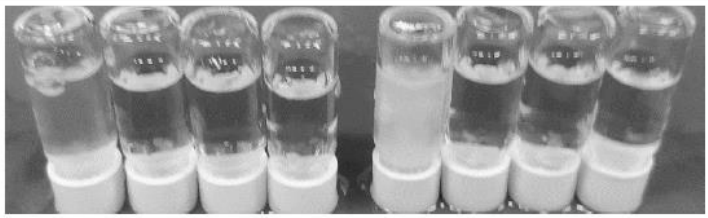
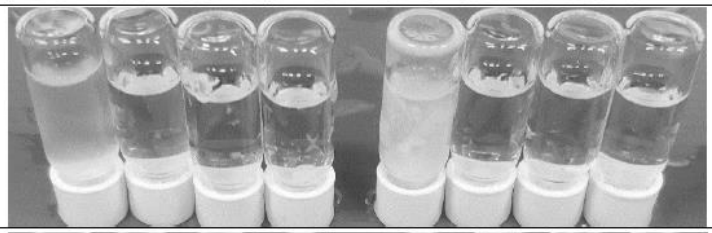
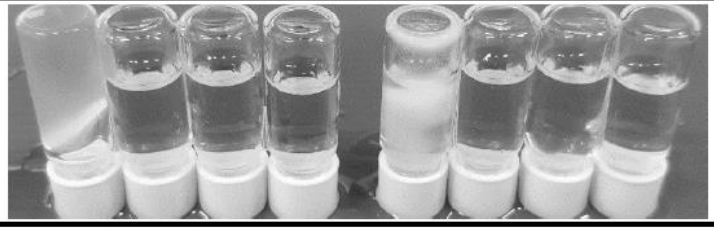
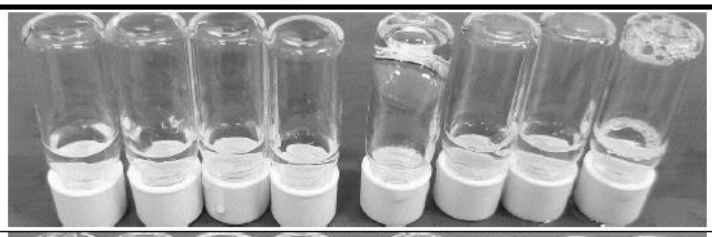
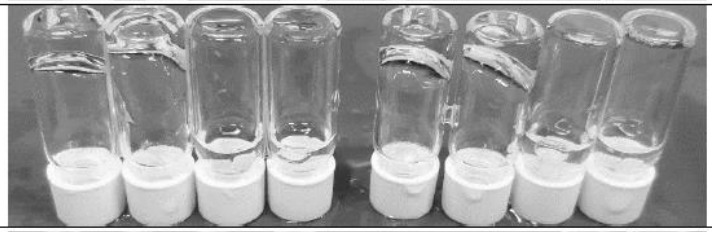
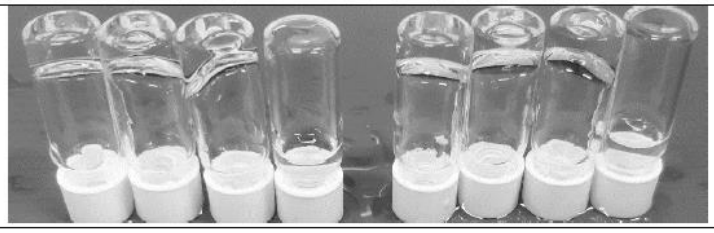
45 minutes	
60 minutes	
120 minutes	
After added to 0.9% saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 6b (continued)

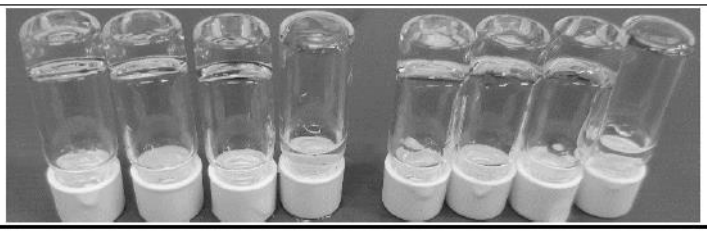
120 minutes	

Figure 6b (continued)

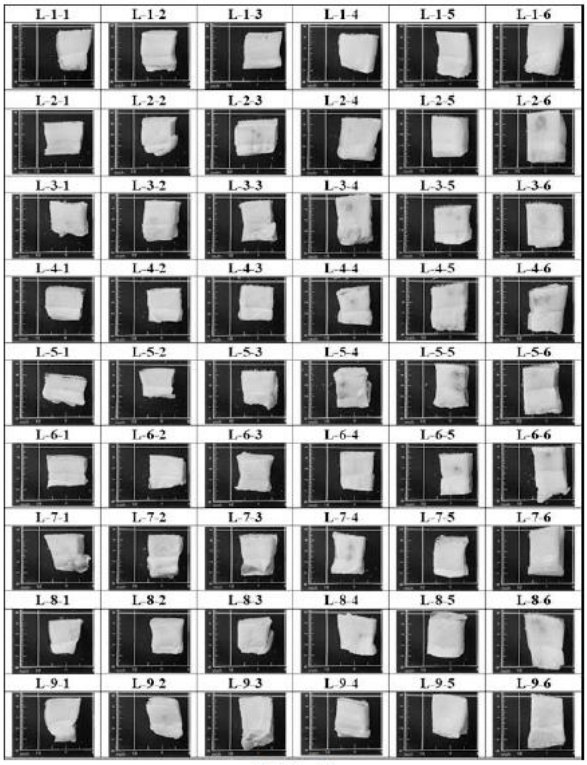


FIG. 7a

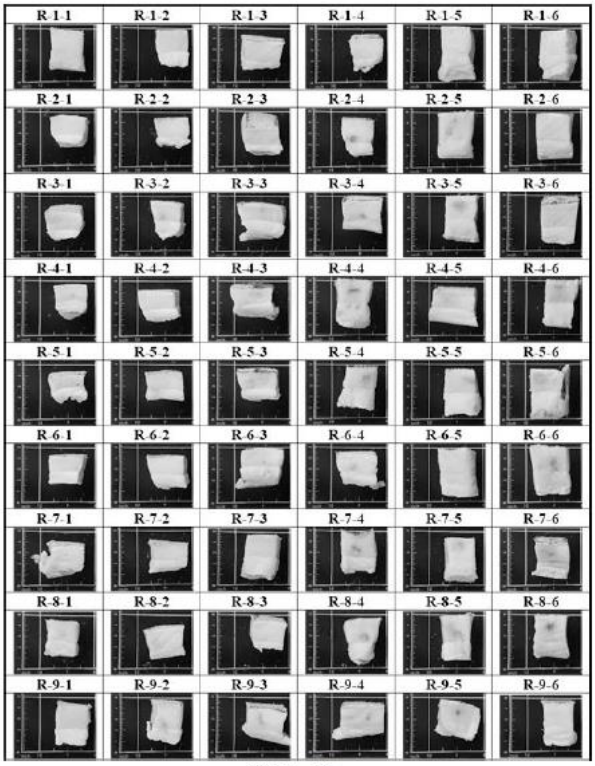


FIG. 7b

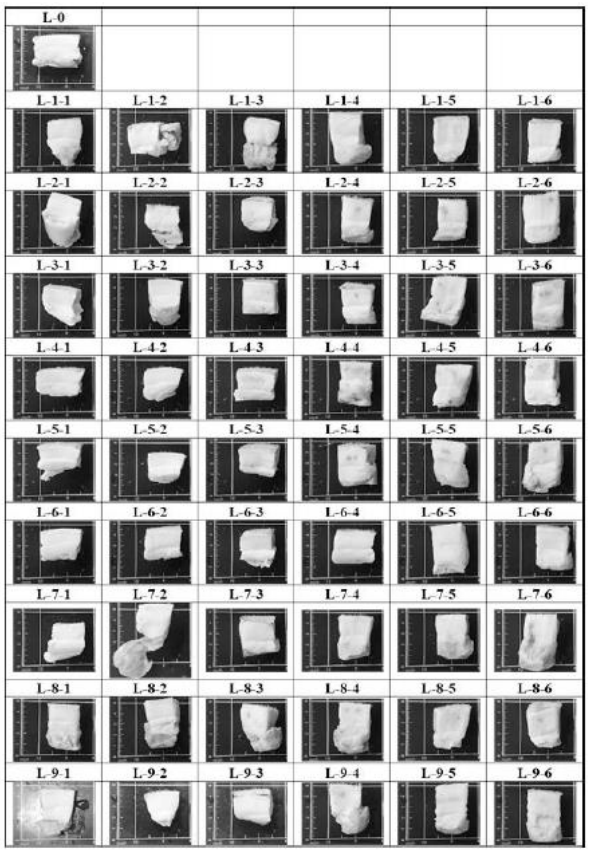


FIG. 7c



FIG. 7d


L-0
L-1-1
L-1-2
L-1-3
L-1-4
L-1-5
L-1-6
L-2-1
L-2-2
L-2-3
L-2-4
L-2-5
L-2-6
L-3-1
L-3-2
L-3-3
L-3-4
L-3-5
L-3-6
L-4-1
L-4-2
L-4-3
L-4-4
L-4-5
L-4-6
L-5-1
L-5-2
L-5-3
L-5-4
L-5-5
L-5-6
L-6-1
L-6-2
L-6-3
L-6-4
L-6-5
L-6-6
L-7-1
L-7-2
L-7-3
L-7-4
L-7-5
L-7-6
L-8-1
L-8-2
L-8-3
L-8-4
L-8-5
L-8-6
L-9-1
L-9-2
L-9-3
L-9-4
L-9-5
L-9-6

FIG. 7e


R-0
R-1-1
R-1-2
R-1-3
R-1-4
R-1-5
R-1-6
R-2-1
R-2-2
R-2-3
R-2-4
R-2-5
R-2-6
R-3-1
R-3-2
R-3-3
R-3-4
R-3-5
R-3-6
R-4-1
R-4-2
R-4-3
R-4-4
R-4-5
R-4-6
R-5-1
R-5-2
R-5-3
R-5-4
R-5-5
R-5-6
R-6-1
R-6-2
R-6-3
R-6-4
R-6-5
R-6-6
R-7-1
R-7-2
R-7-3
R-7-4
R-7-5
R-7-6
R-8-1
R-8-2
R-8-3
R-8-4
R-8-5
R-8-6
R-9-1
R-9-2
R-9-3
R-9-4
R-9-5
R-9-6

FIG. 7f

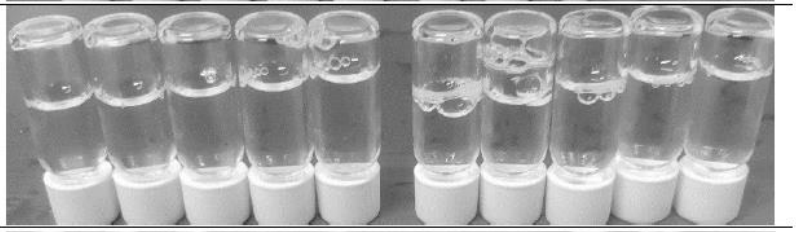
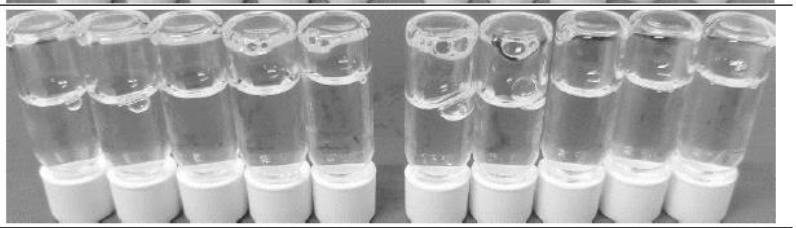
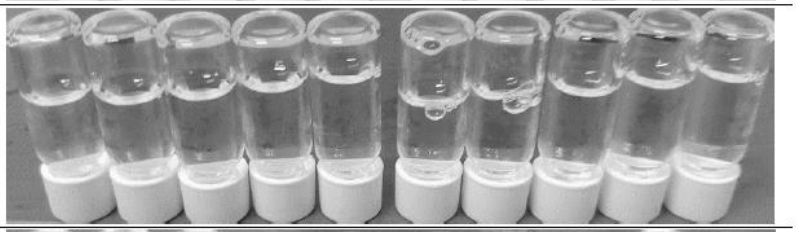
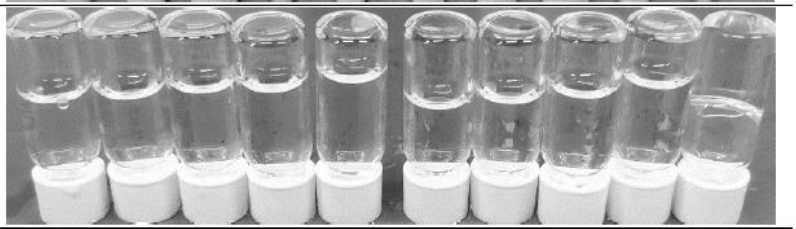
Group 1	Appearance
+ 2.5 mg/mL L-histidine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 8a

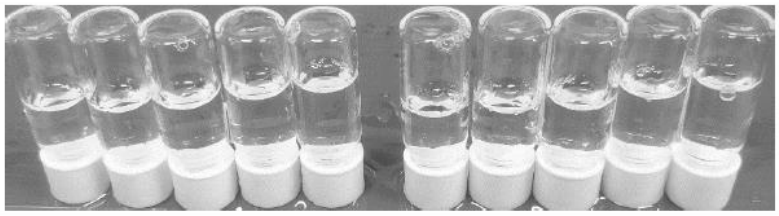
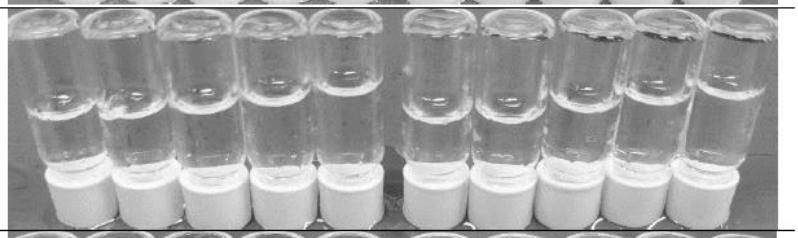
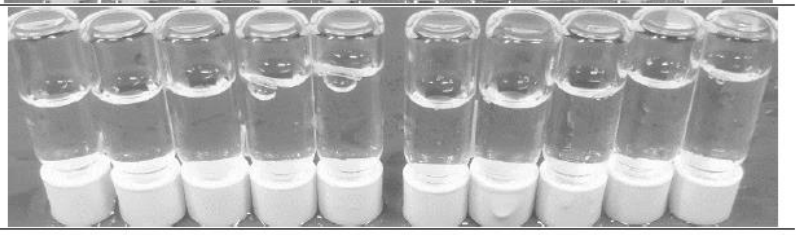
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 8a (continued)

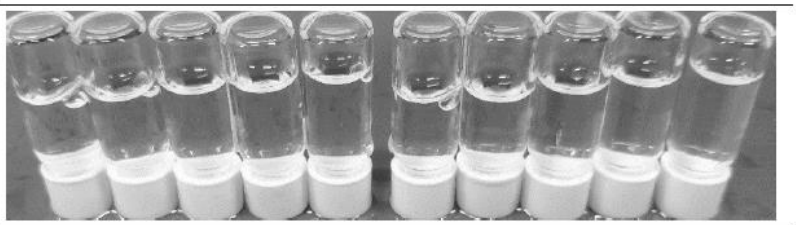
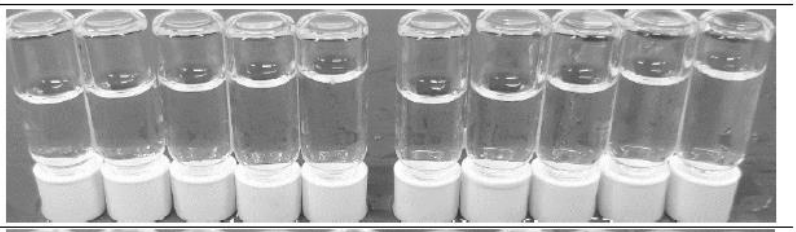
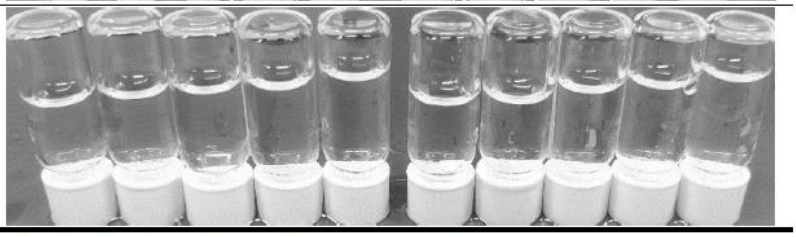
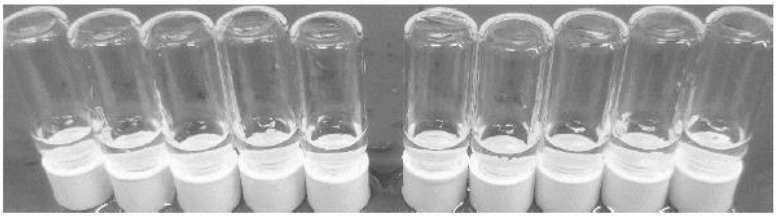
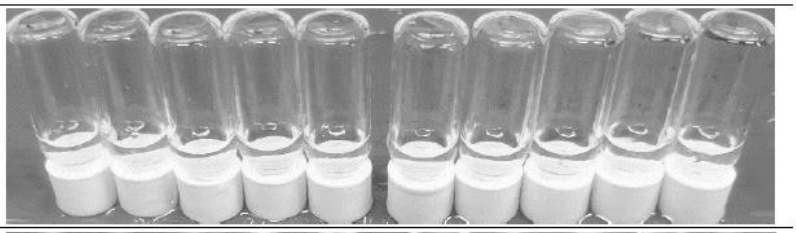
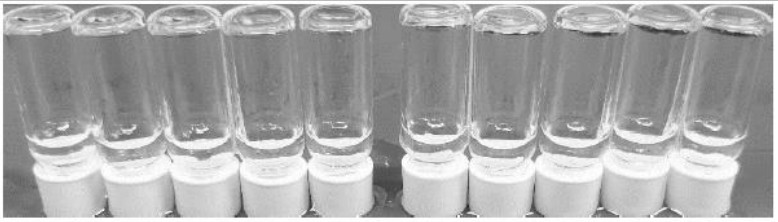
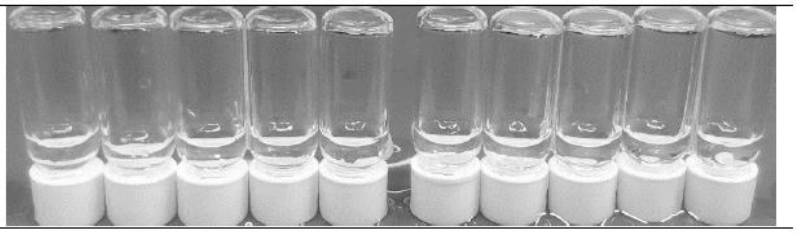
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 8a (continued)

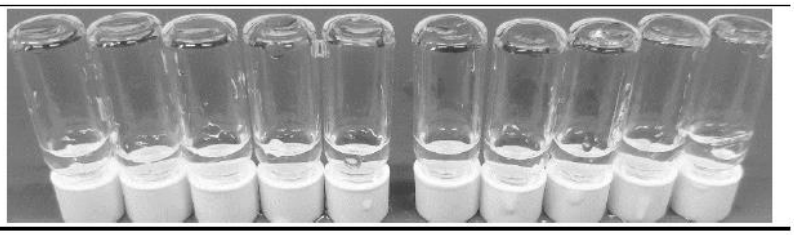
120 minutes	

Figure 8a (continued)

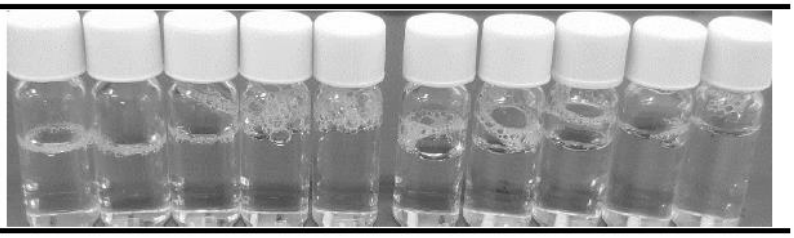
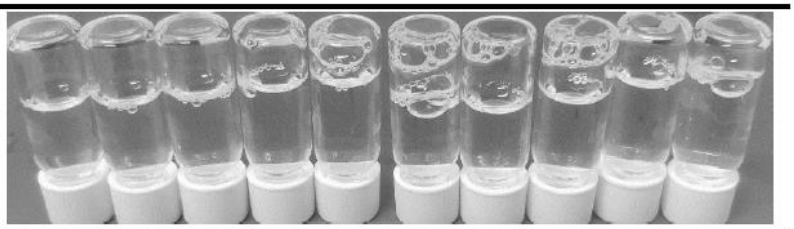
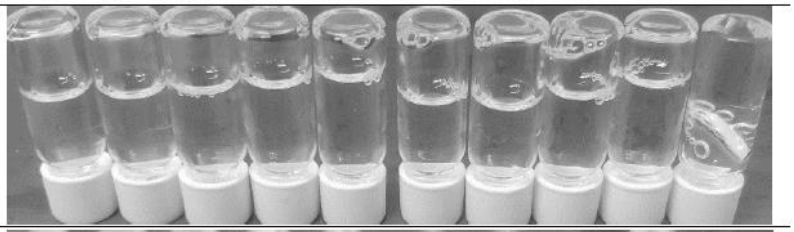
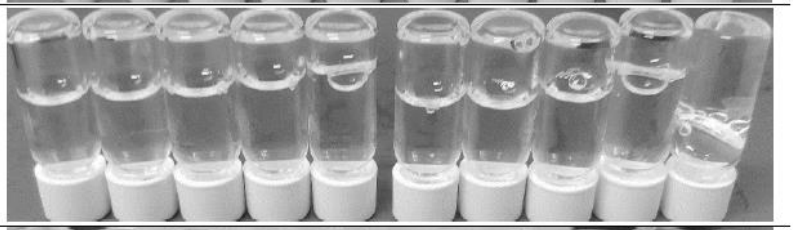
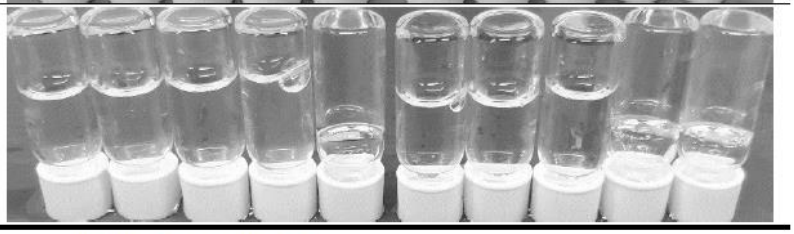
Group 2	Appearance
+ 5 mg/mL L-histidine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 8b

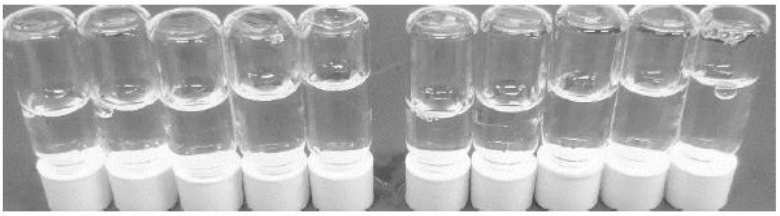
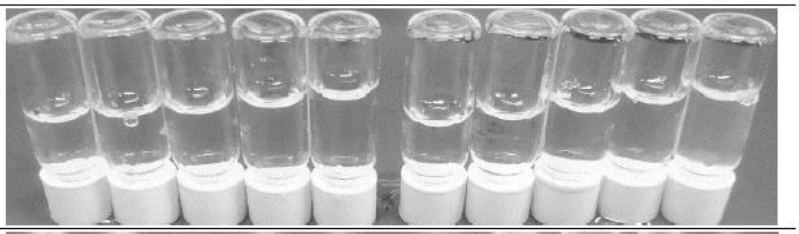
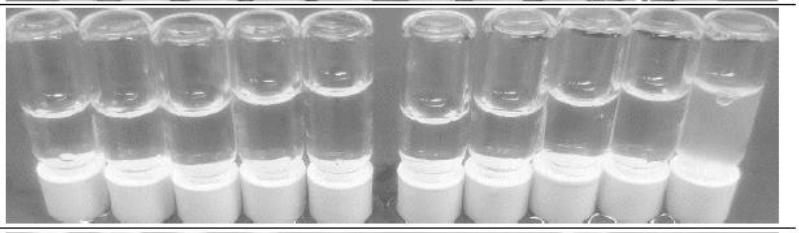
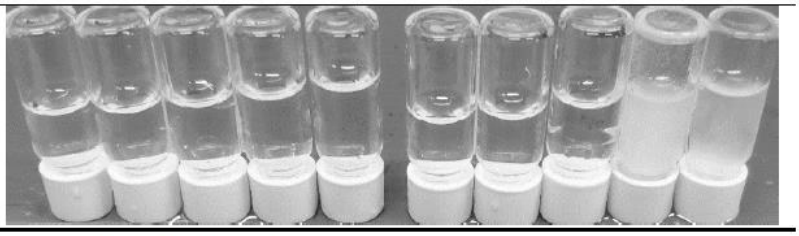
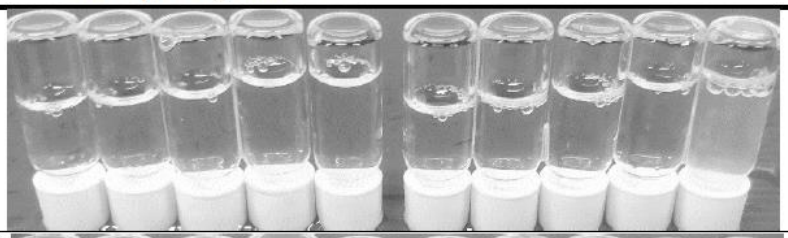
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 8b (continued)

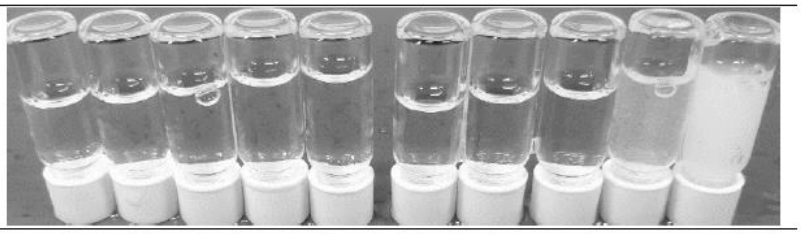
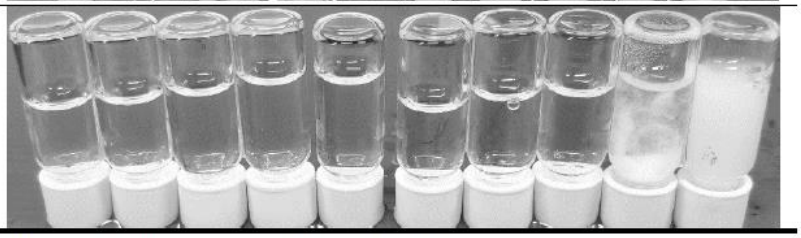
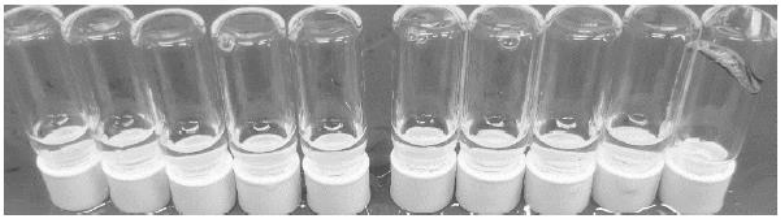
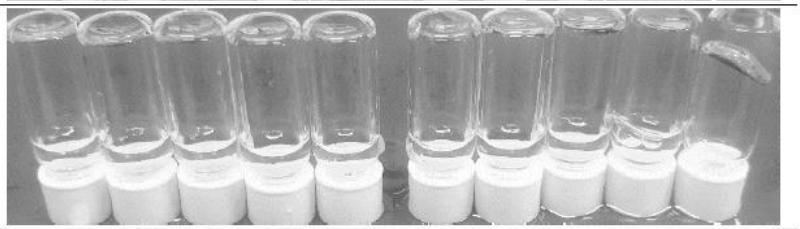
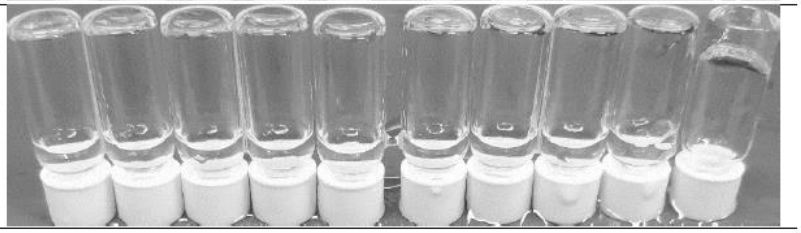
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 8b (continued)

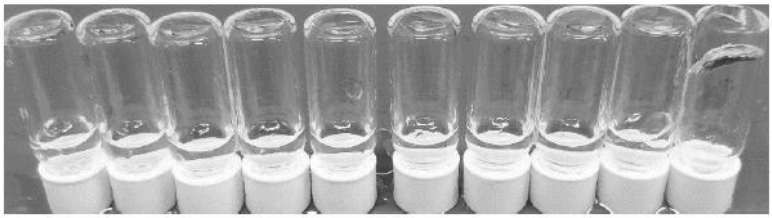
120 minutes	

Figure 8b (continued)

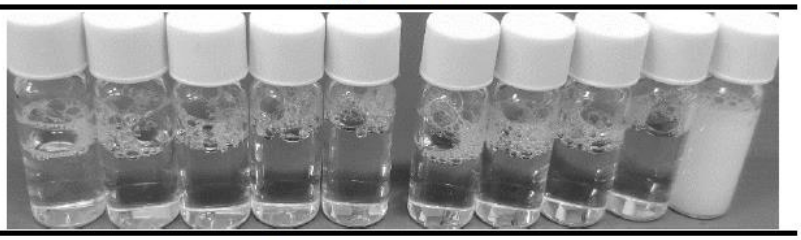
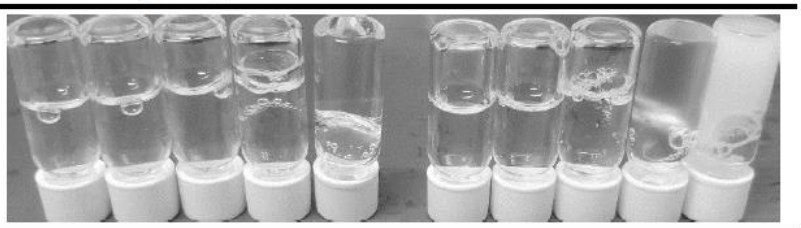
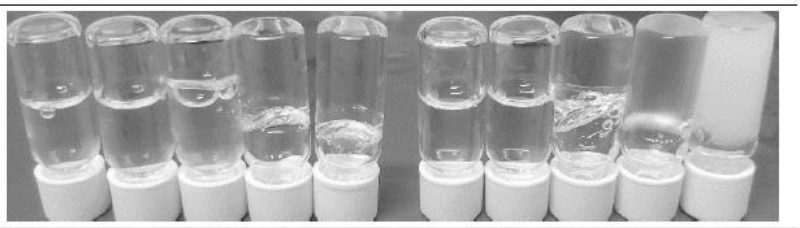
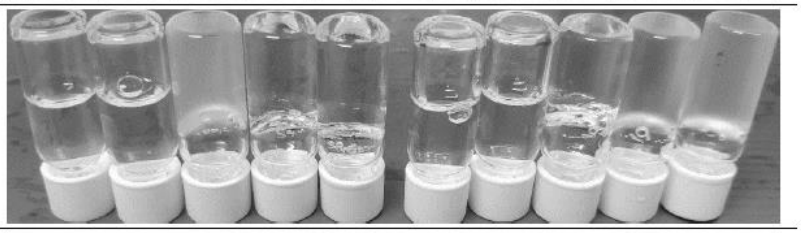
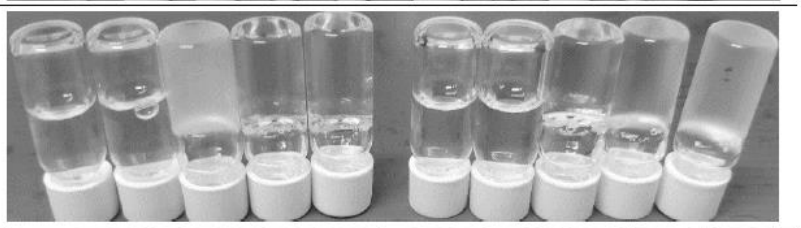
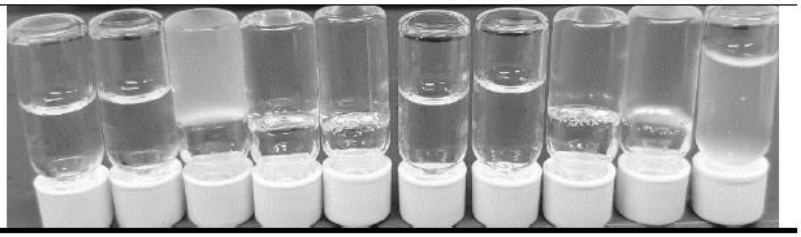
Group 3	Appearance
+ 10 mg/mL L-histidine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 8c

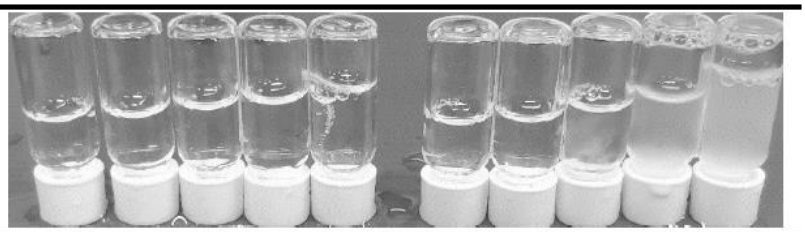
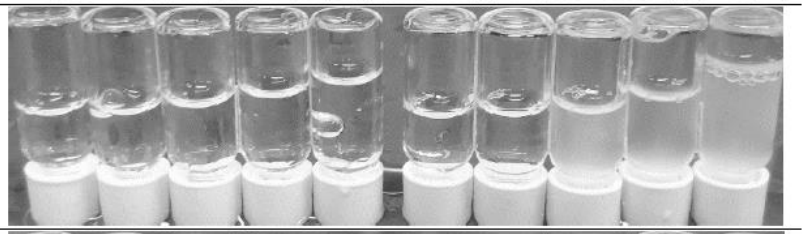
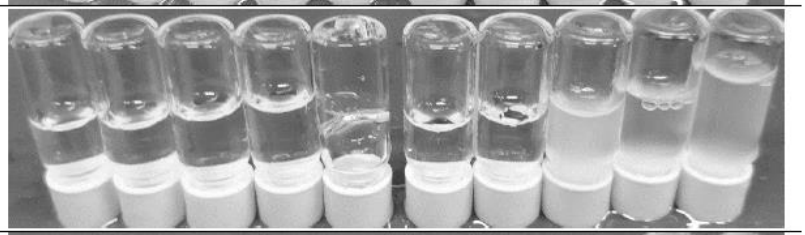
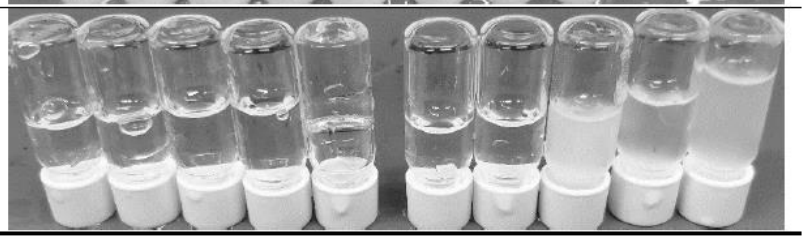
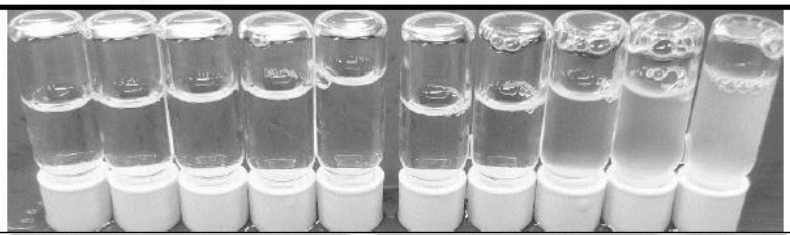
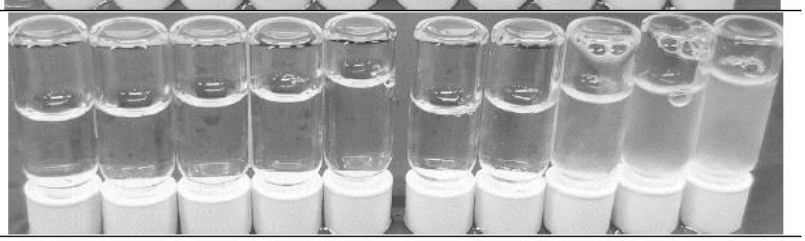
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 8c (continued)

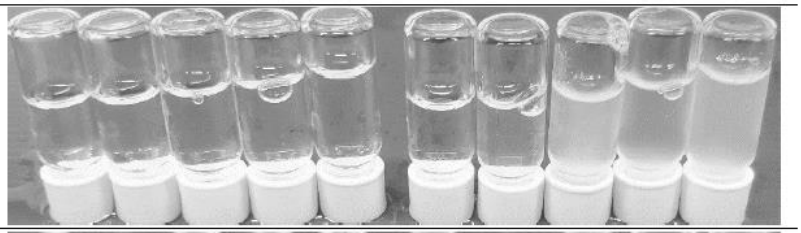
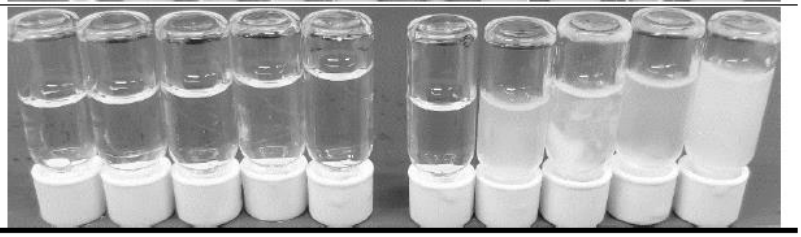
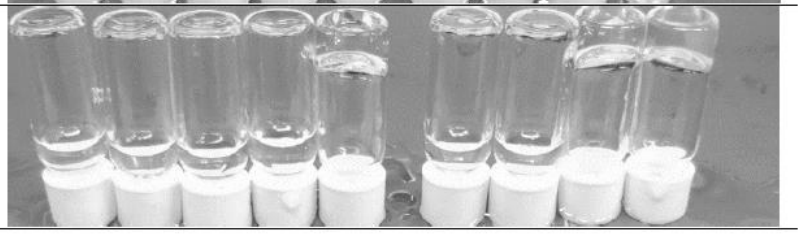
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 8c (continued)

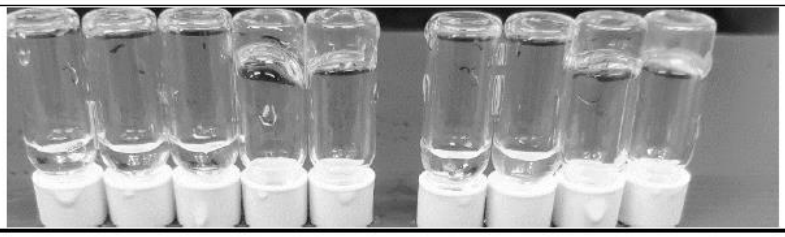
120 minutes	

Figure 8c (continued)

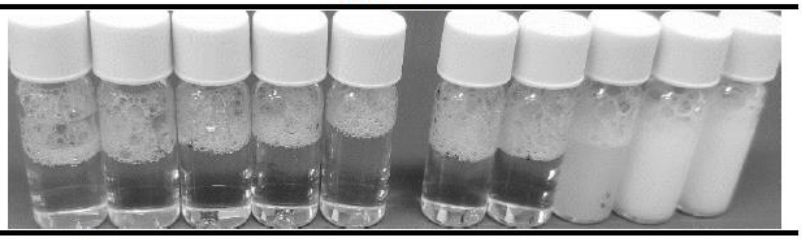
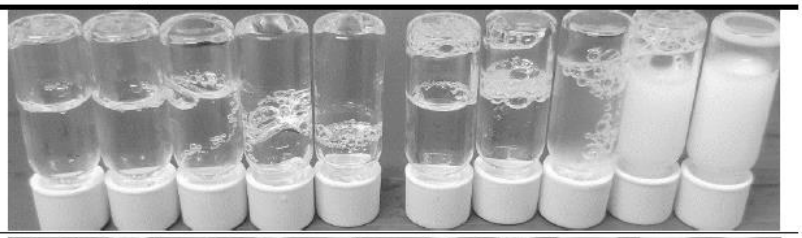
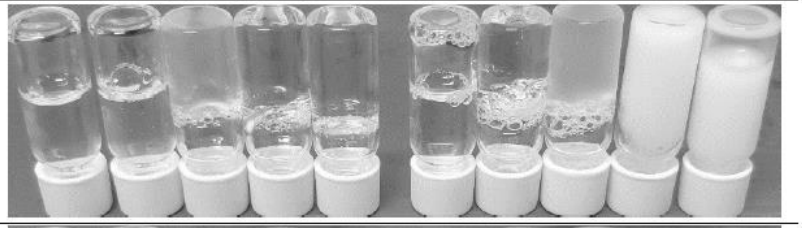
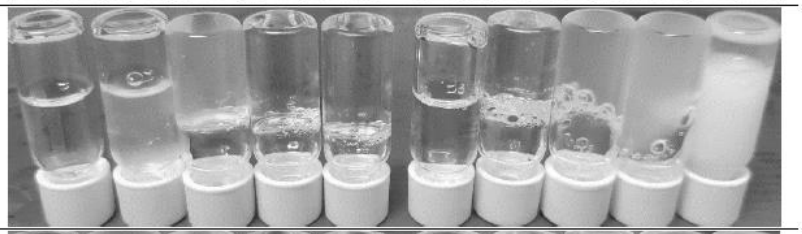
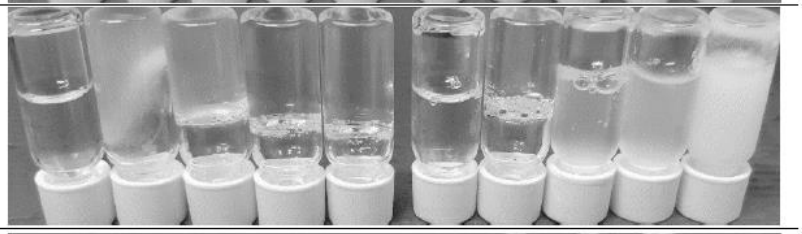
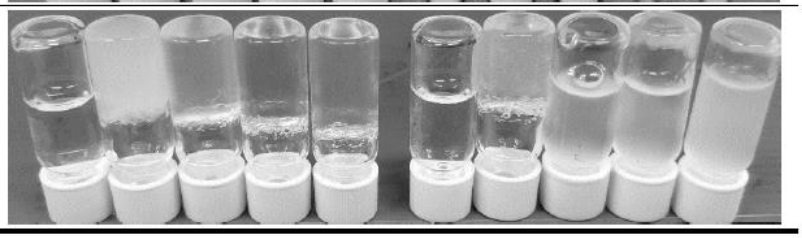
Group 4	Appearance
+ 20 mg/mL L-histidine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 8d

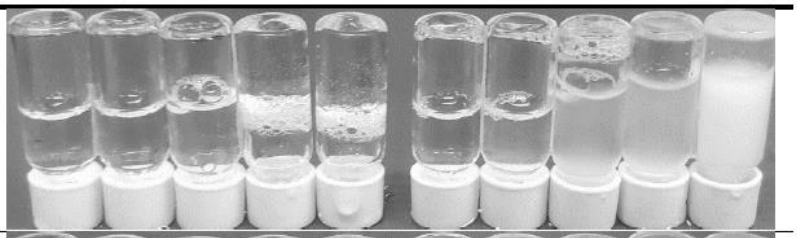
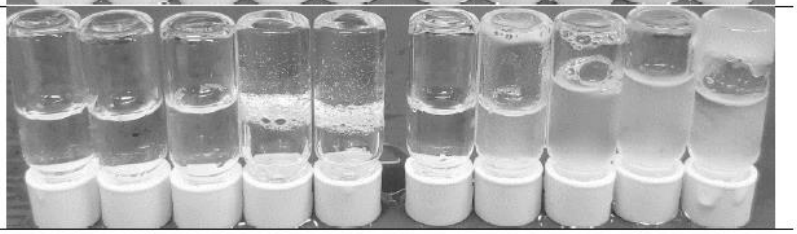
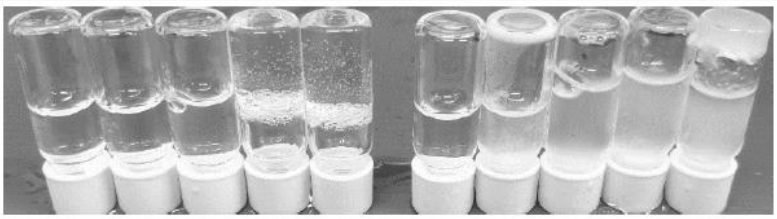
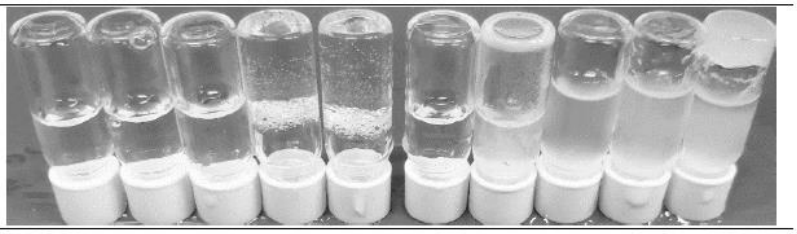
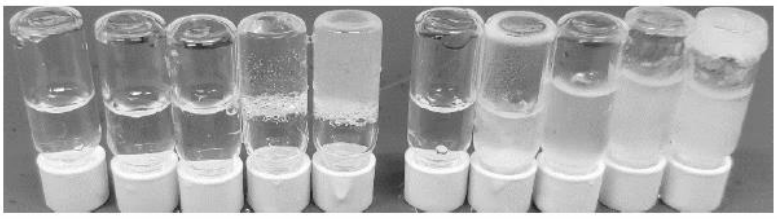
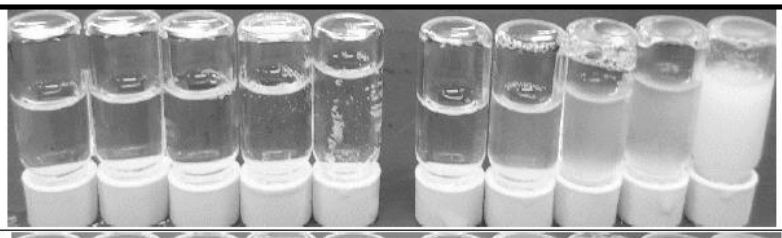
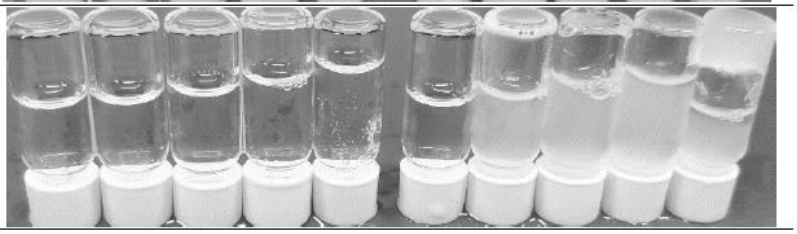
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 8d (continued)

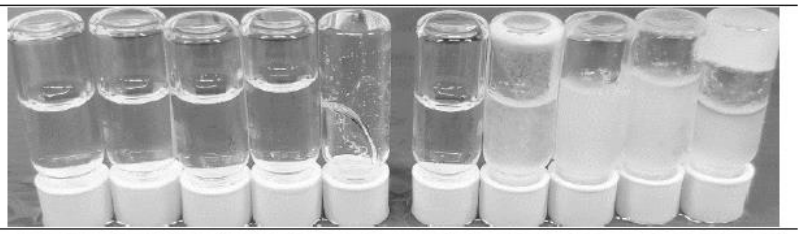
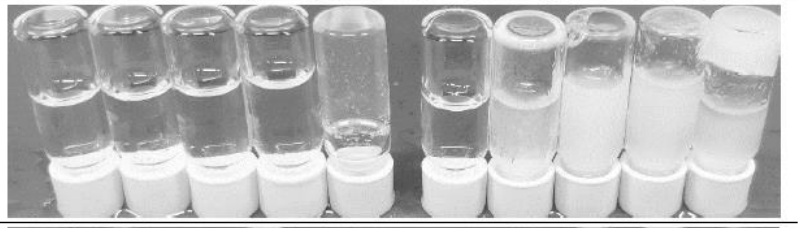
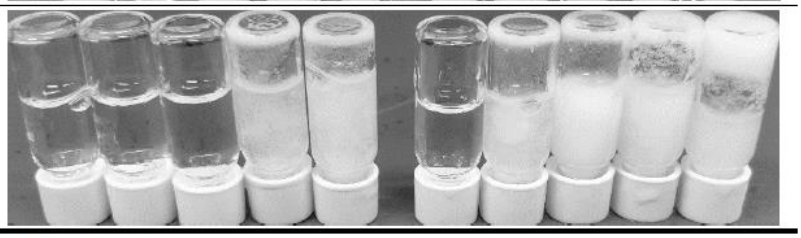
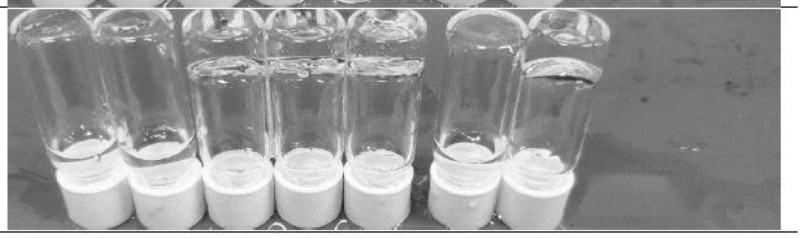
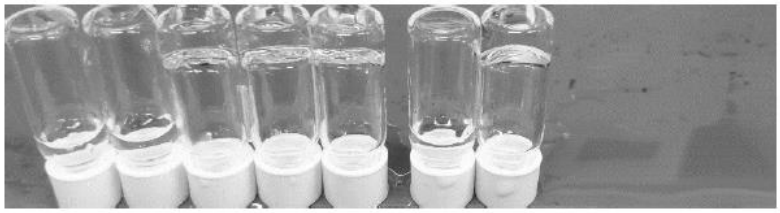
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 8d (continued)

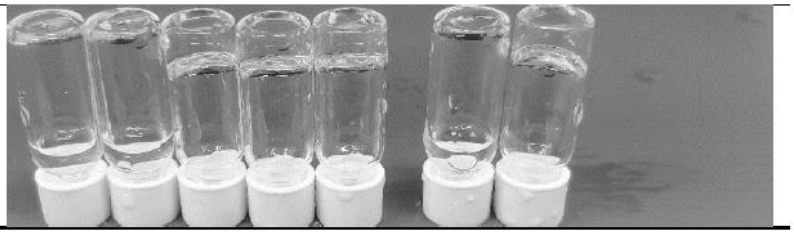
120 minutes	

Figure 8d (continued)

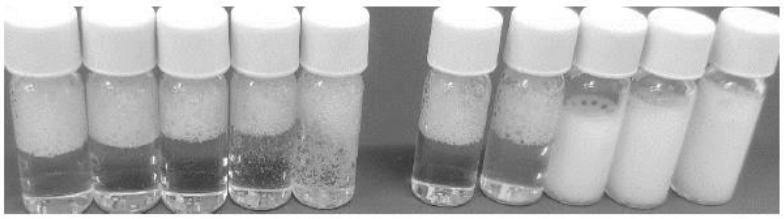
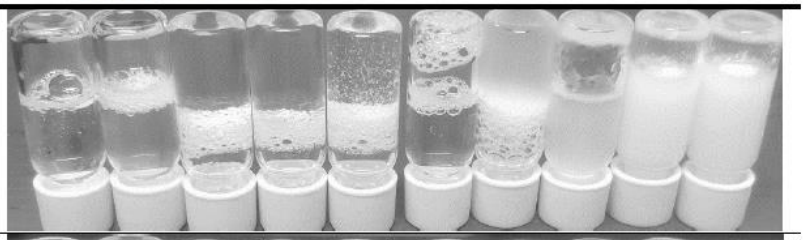
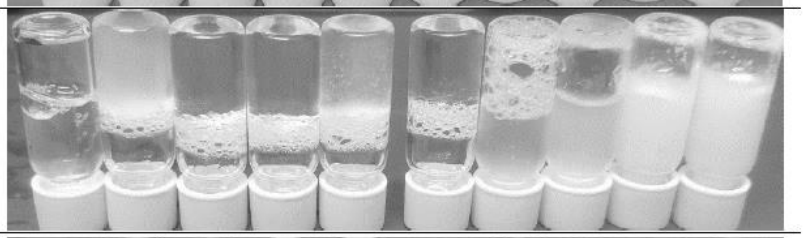
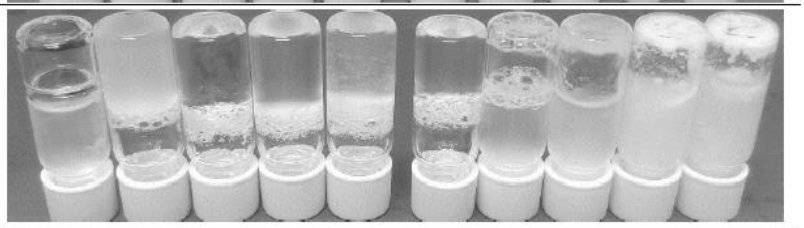
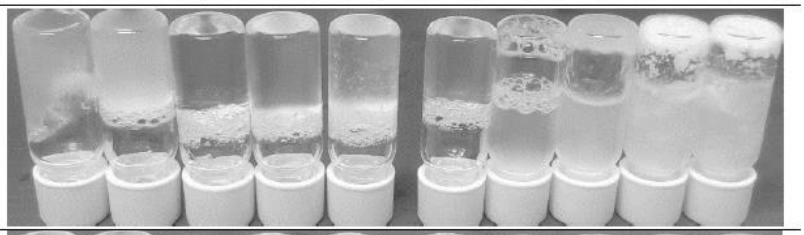
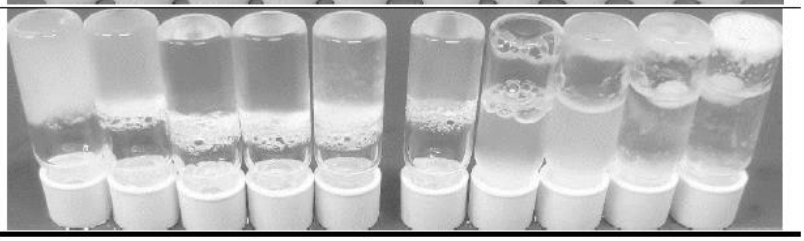
Group 5	Appearance
+ 40 mg/mL L-histidine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 8e

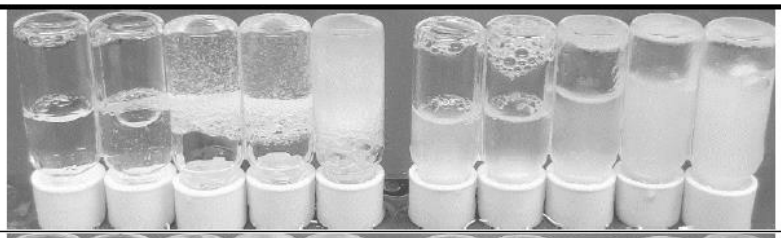
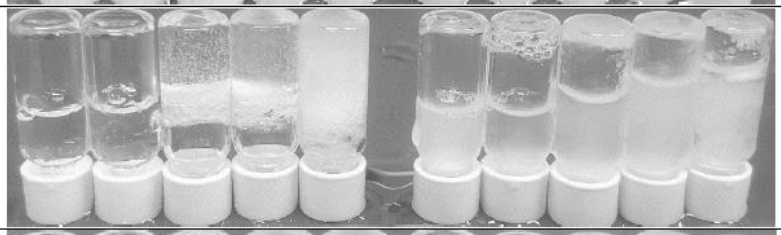
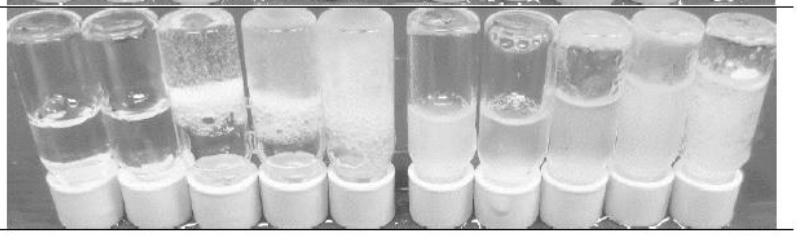
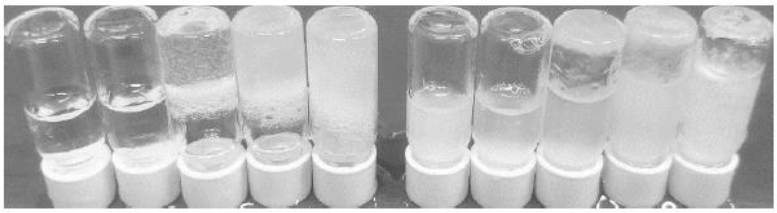
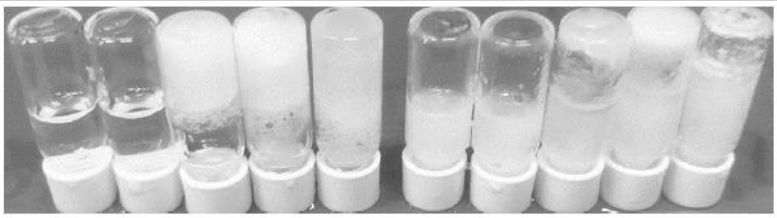
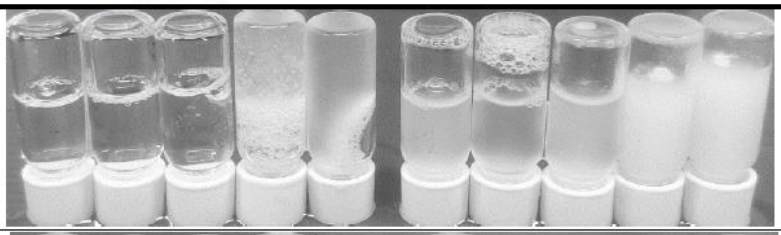
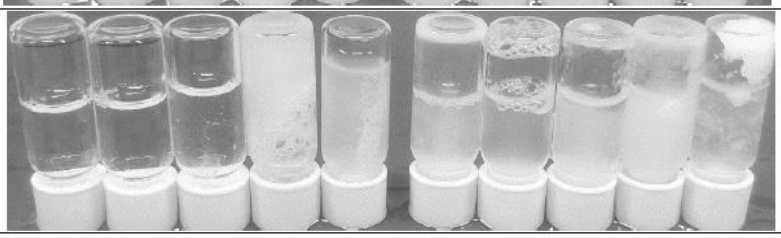
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 8e (continued)

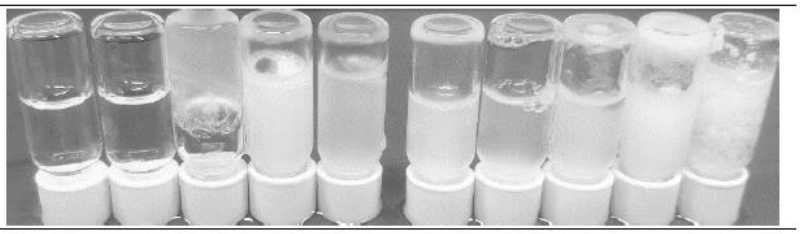
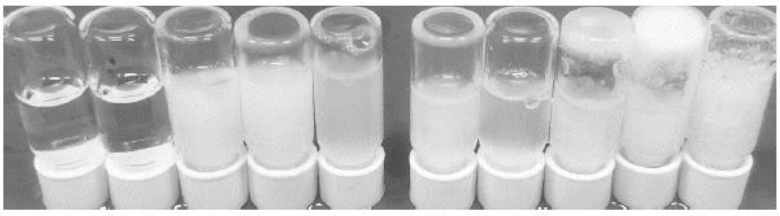
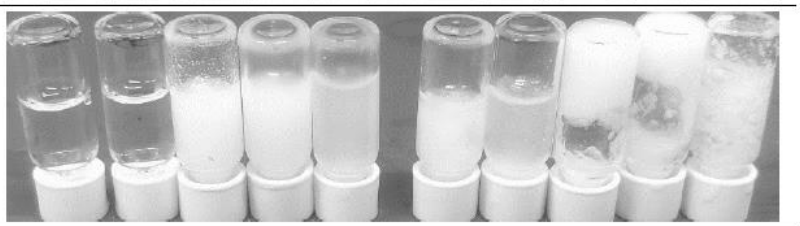
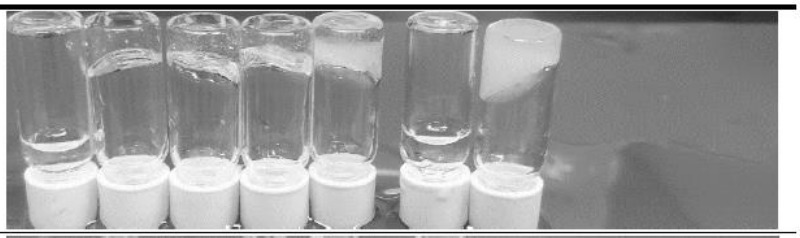
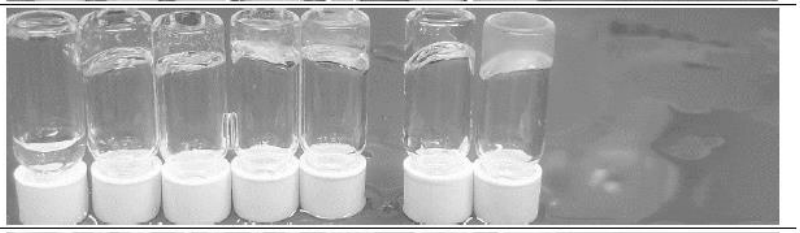
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 8e (continued)

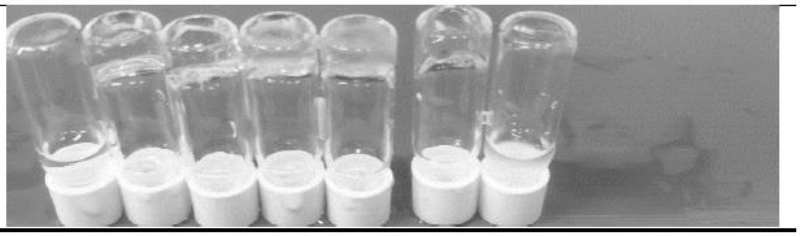
120 minutes	

Figure 8e (continued)

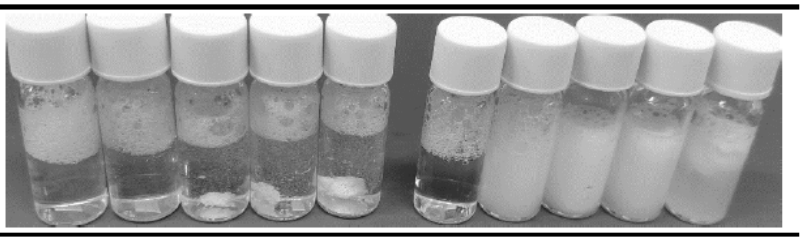
Group 5	Appearance
+ 50 mg/mL L-histidine	

Figure 8f

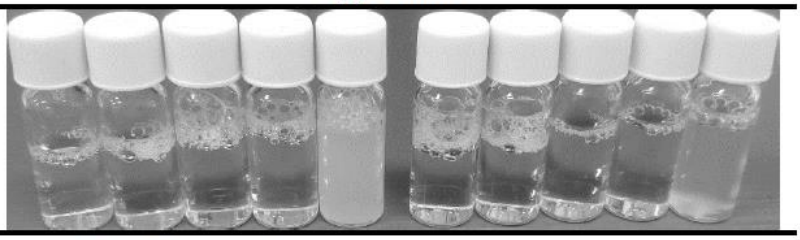
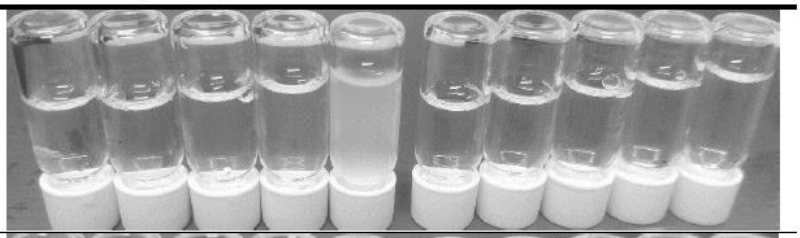
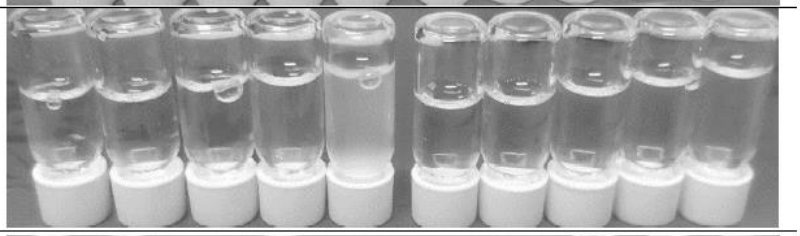
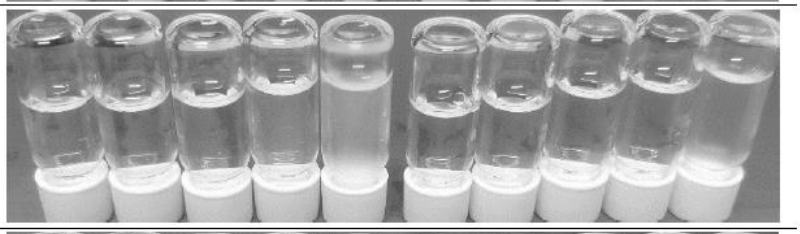
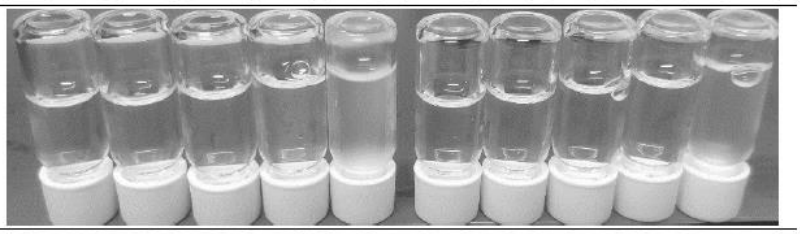
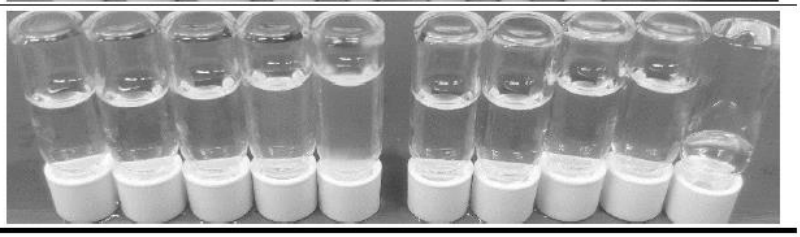
Group 1	Appearance
+ 500 mg/mL L-arginine	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 9

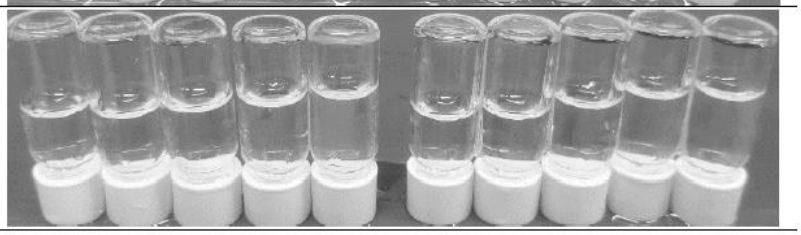
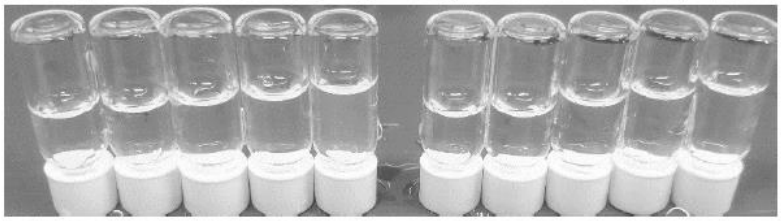
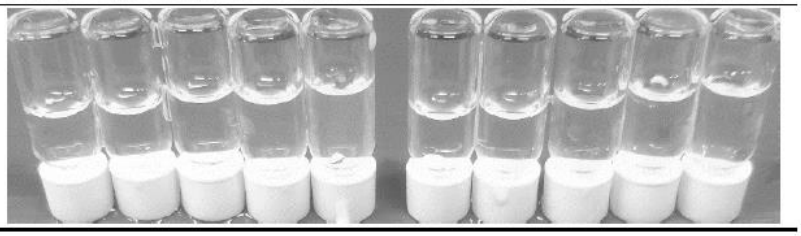
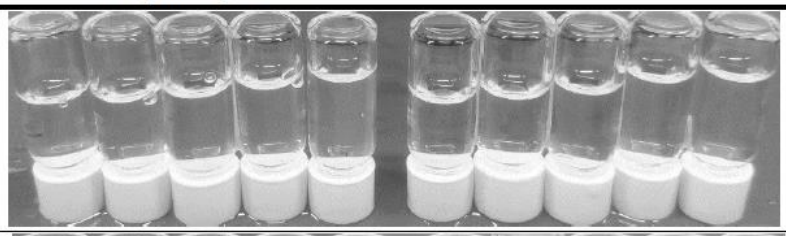
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 9 (continued)

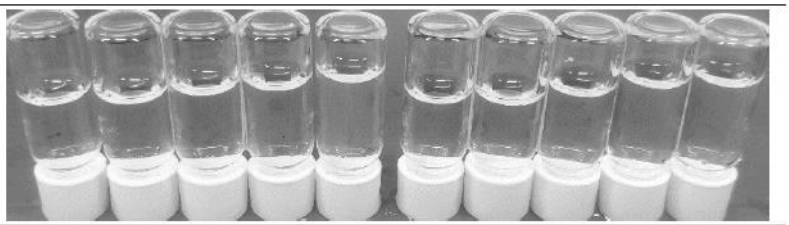
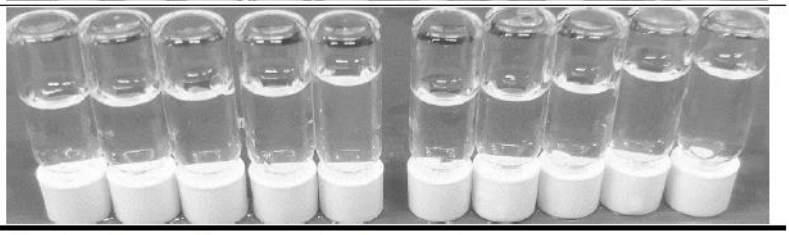
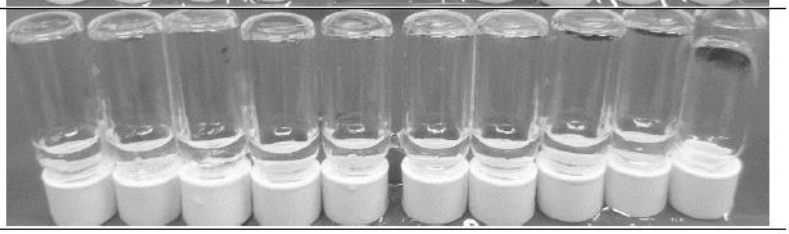
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 9 (continued)

120 minutes	

Figure 9 (continued)

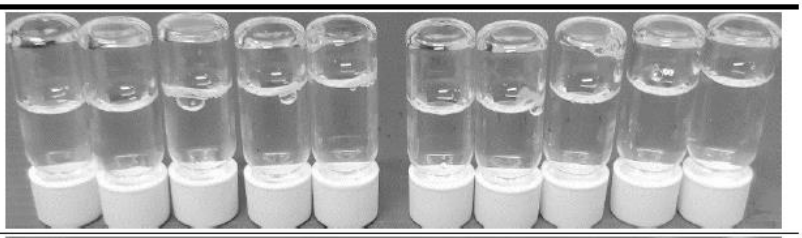
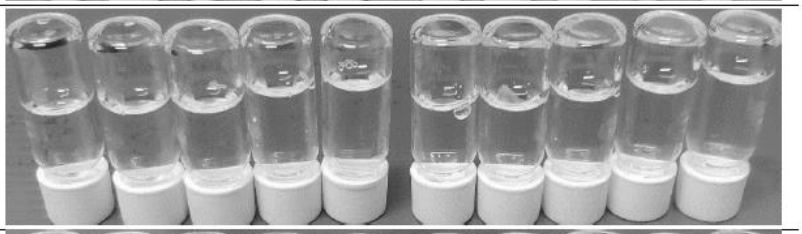
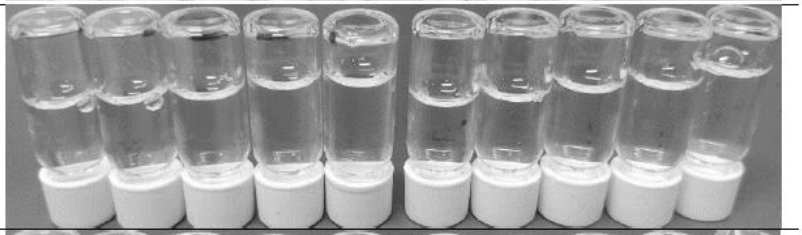
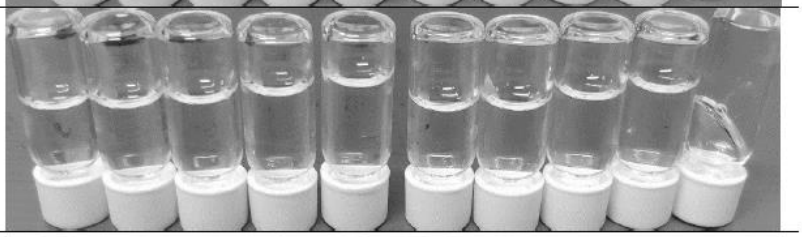
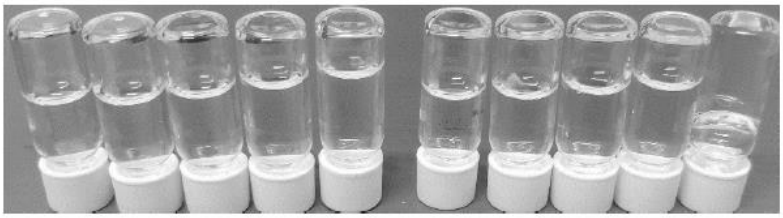
Group 1	Appearance
+ 0.1 % acetic acid	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 10a

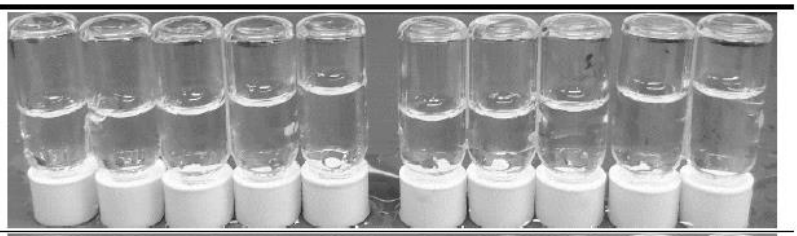
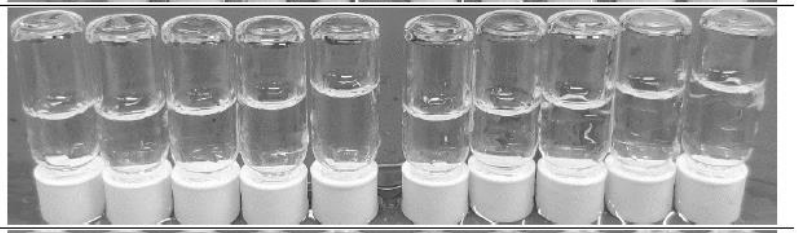
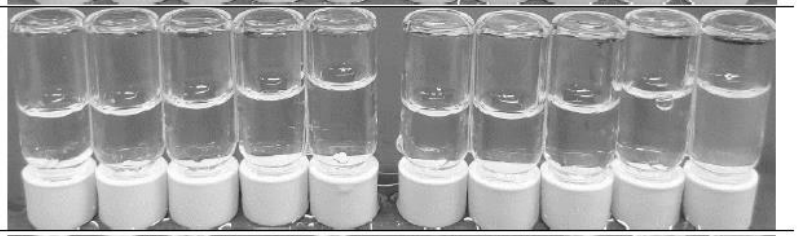
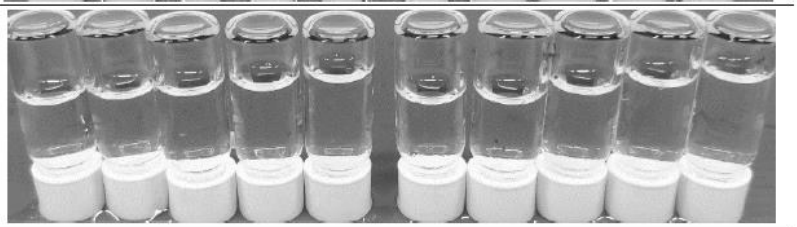
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 10a (continued)

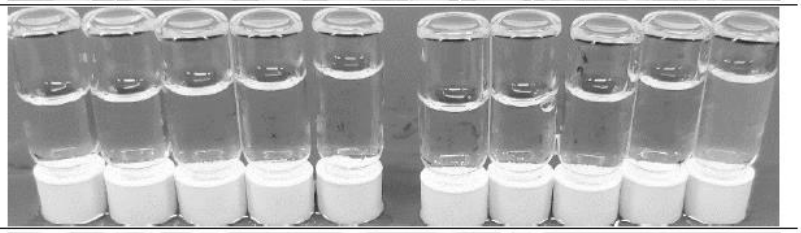
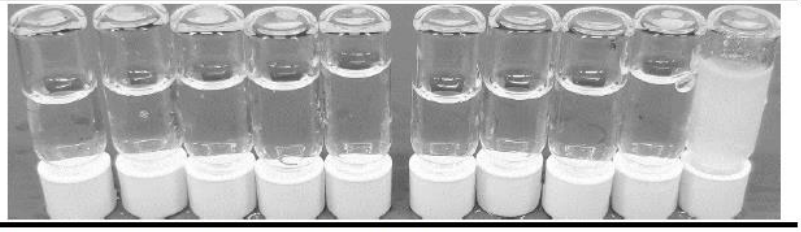
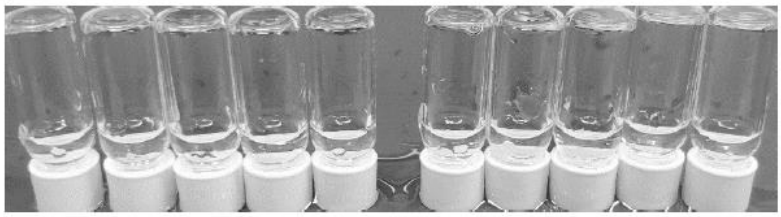
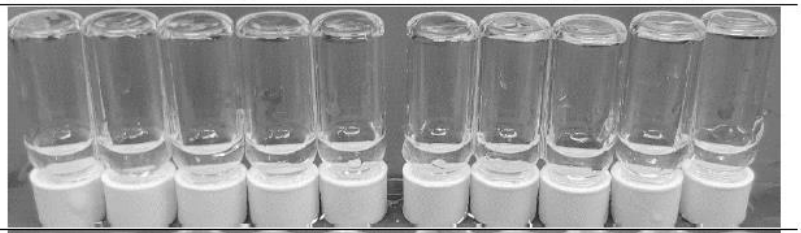
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 10a (continued)

120 minutes	

Figure 10a (continued)

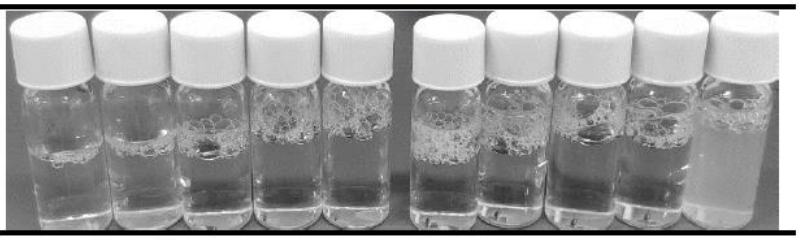
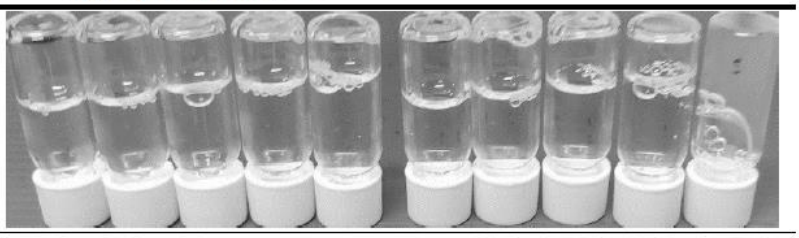
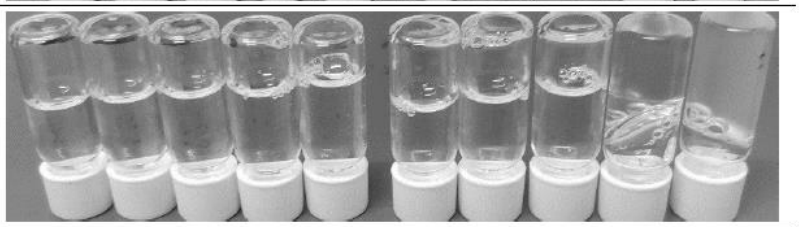
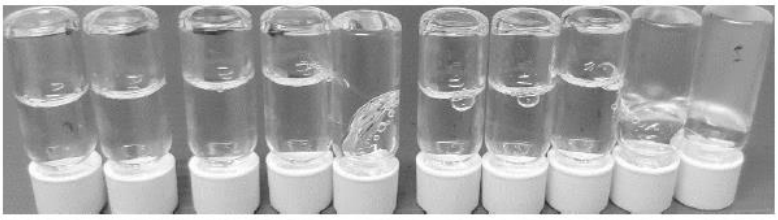
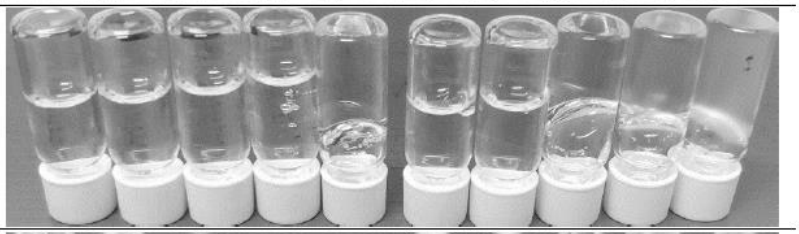
Group 2	Appearance
+ 0.2 % acetic acid	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 10b

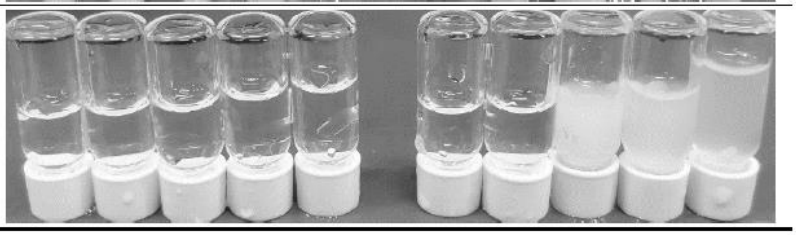
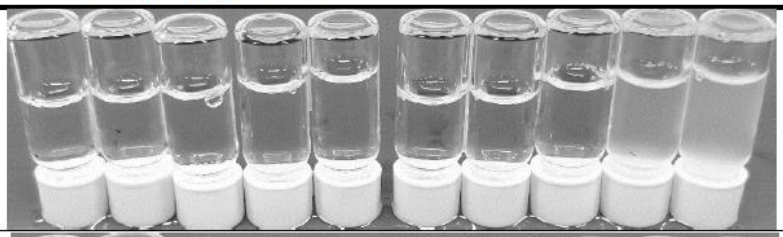
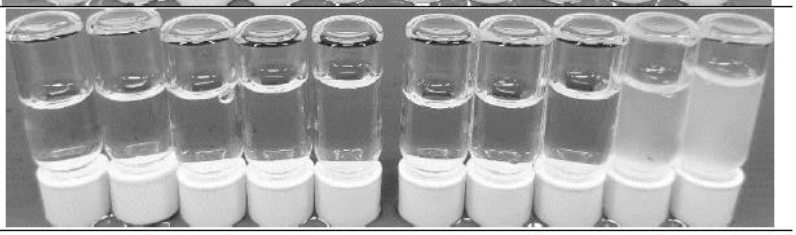
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 10b (continued)

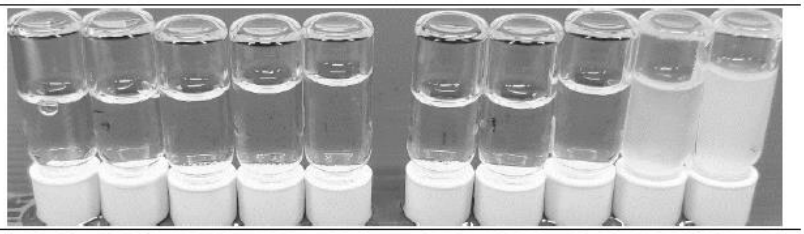
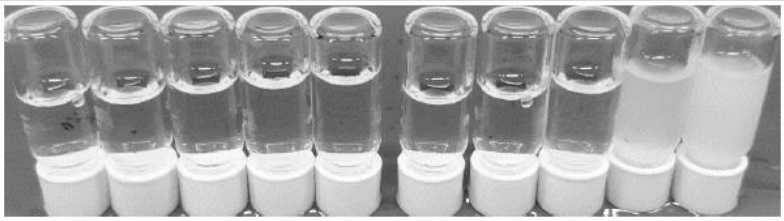
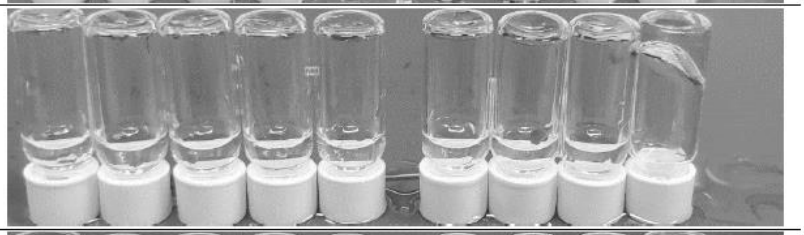
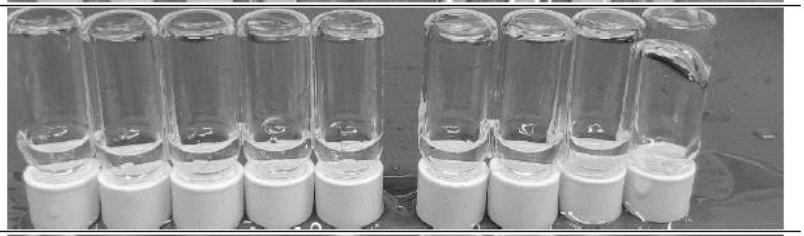
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 10b (continued)

120 minutes	

Figure 10b (continued)

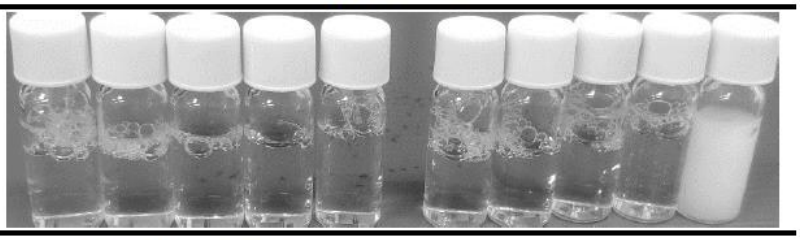
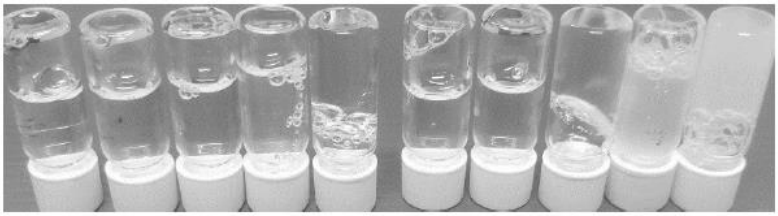
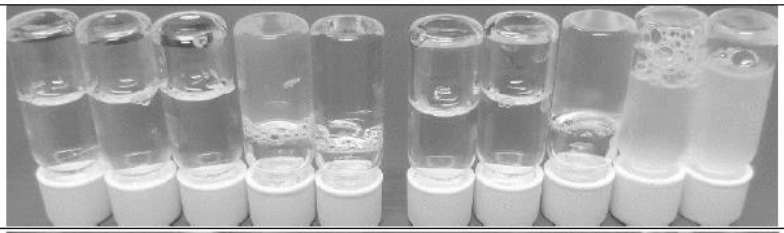
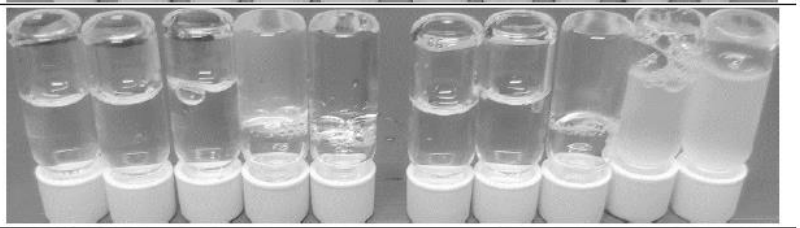
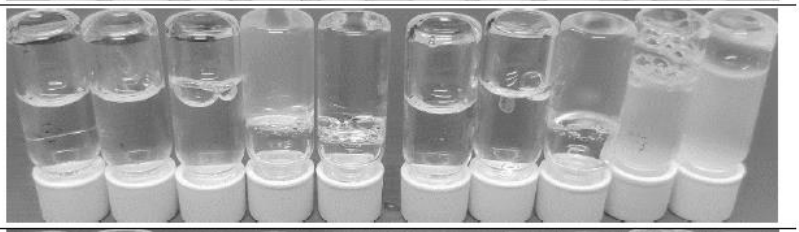
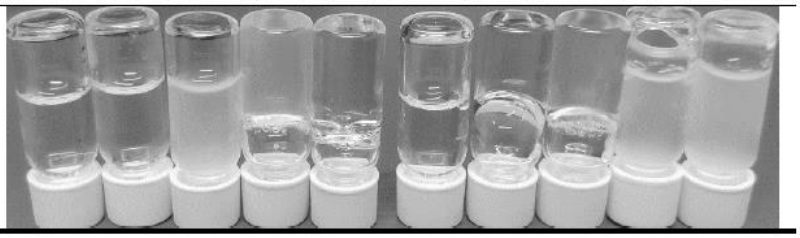
Group 3	Appearance
+ 0.3 % acetic acid	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 10c

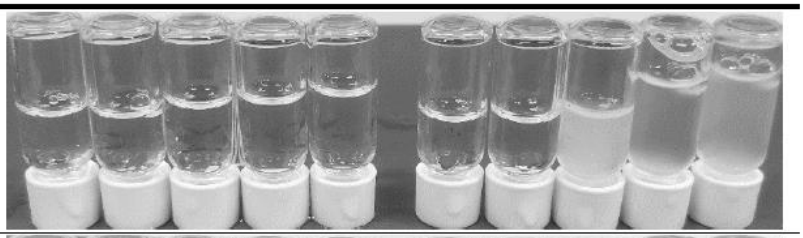
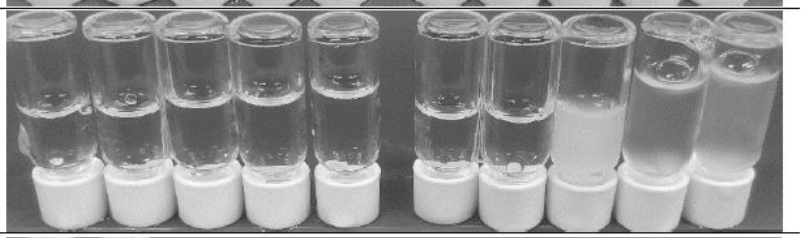
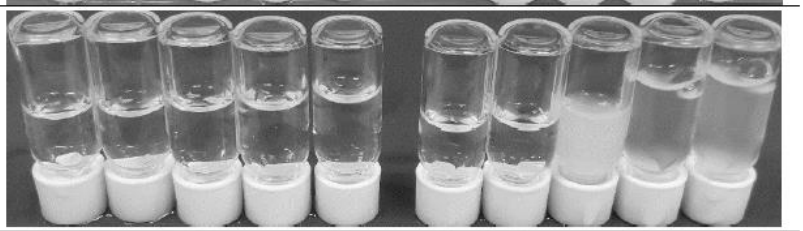
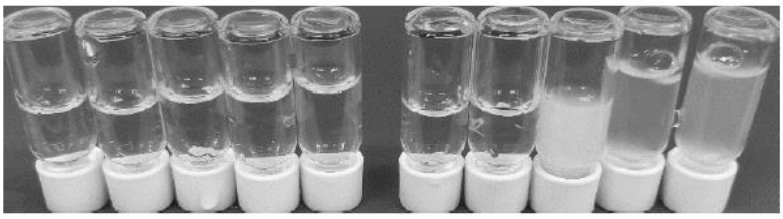
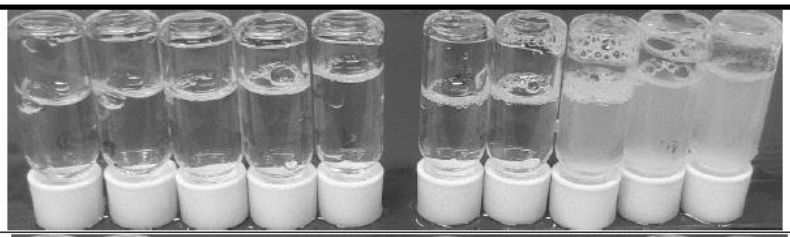
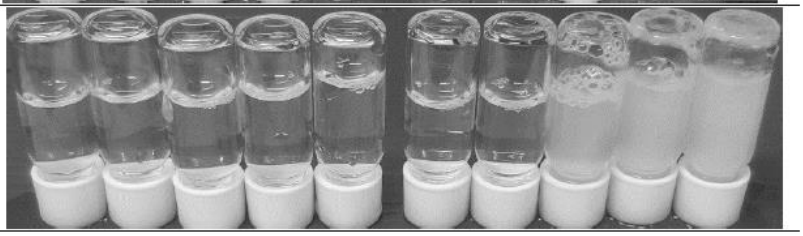
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 10c (continued)

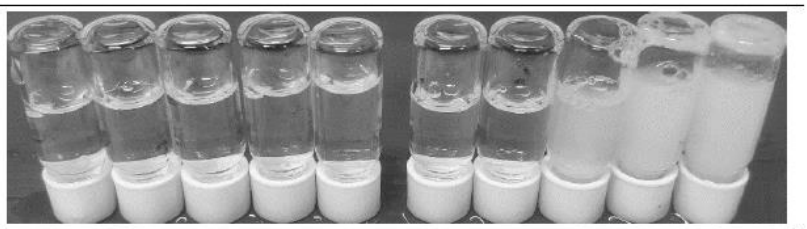
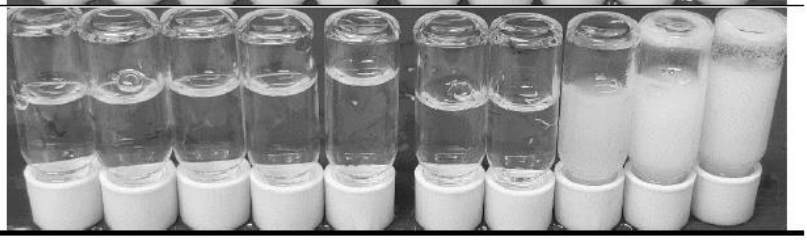
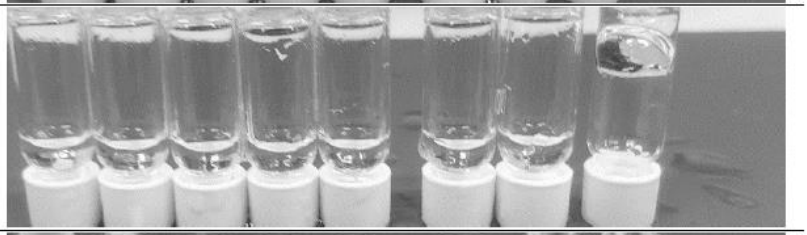
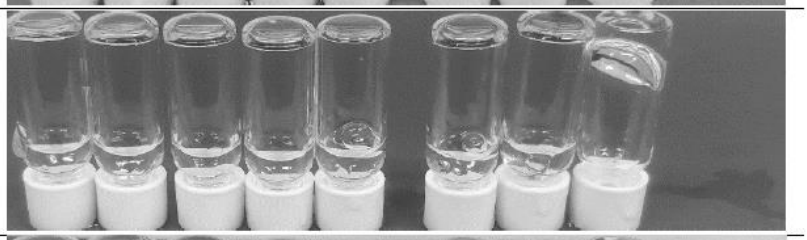
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 10c (continued)

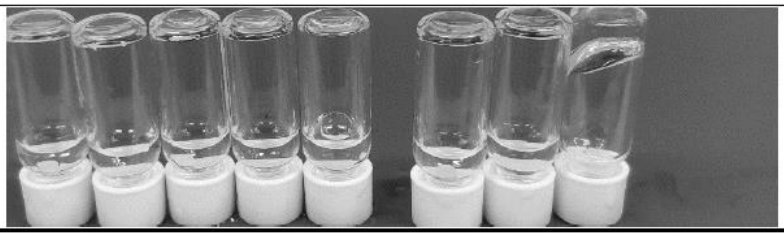
120 minutes	

Figure 10c (continued)

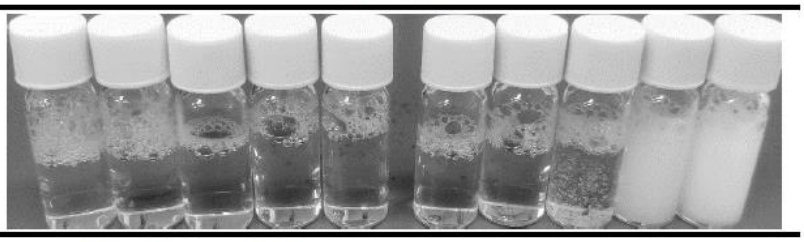
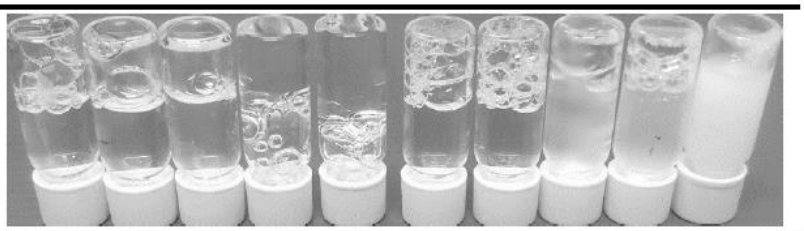
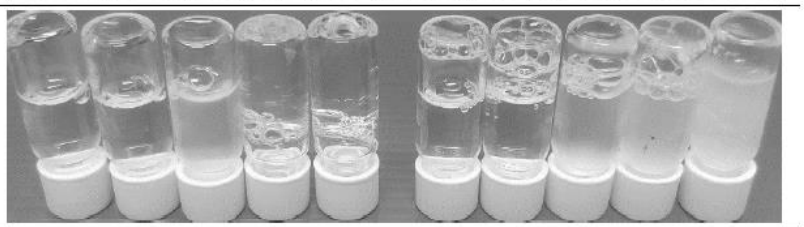
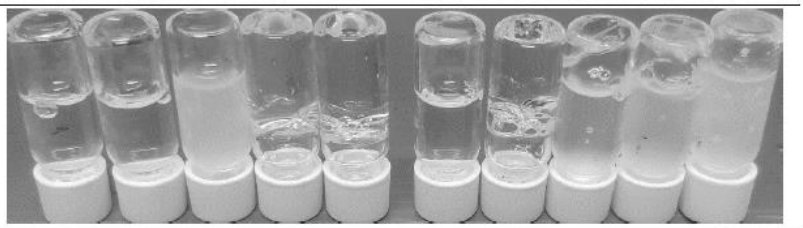
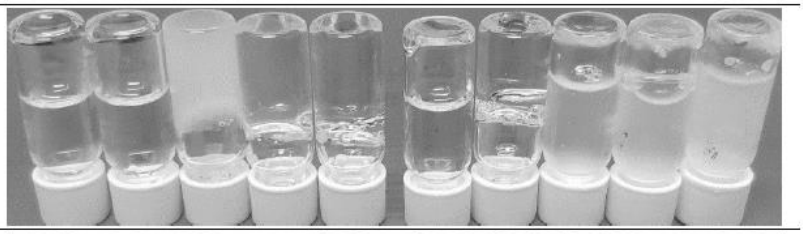
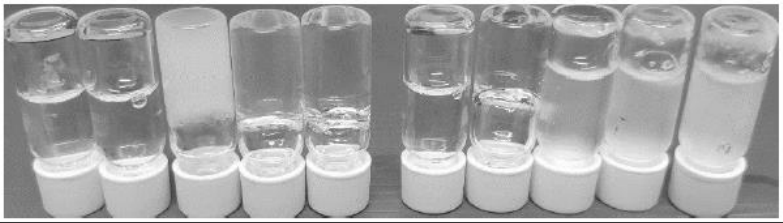
Group 4	Appearance
+ 0.4 % acetic acid	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 10d

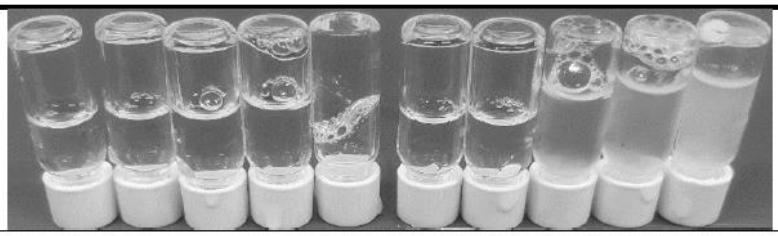
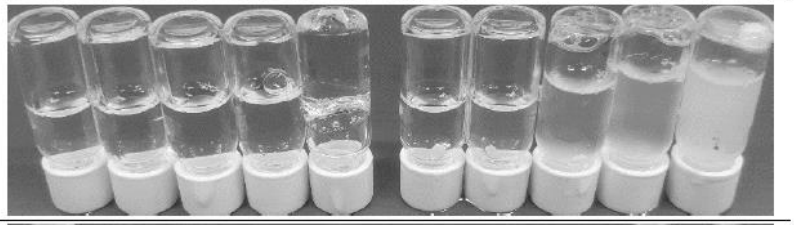
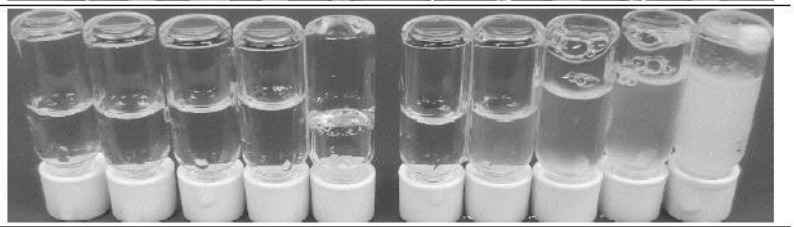
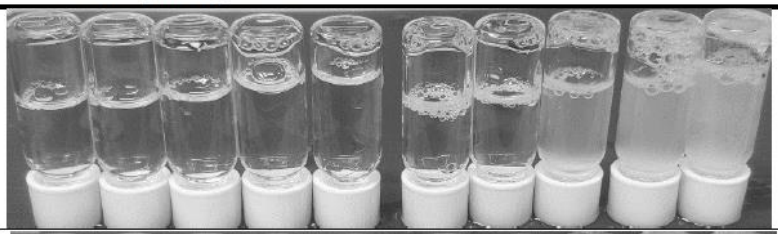
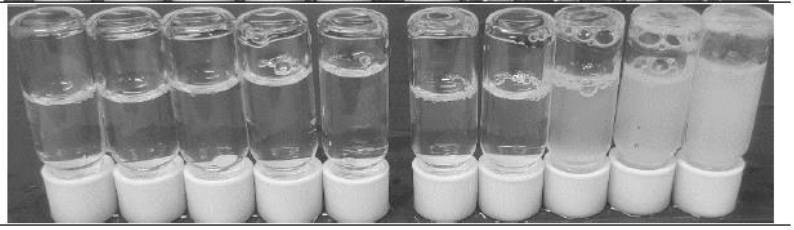
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 10d (continued)

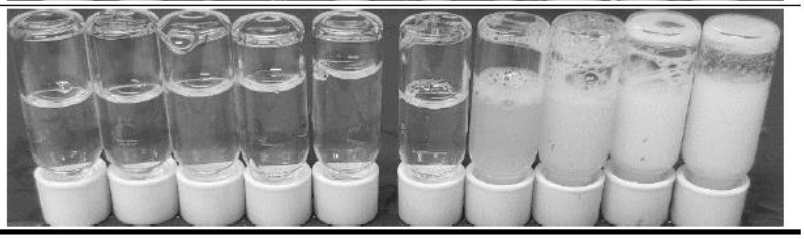
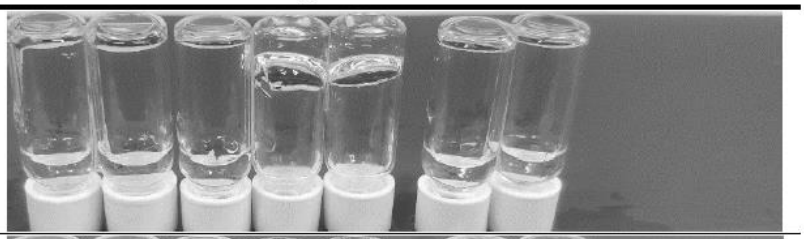
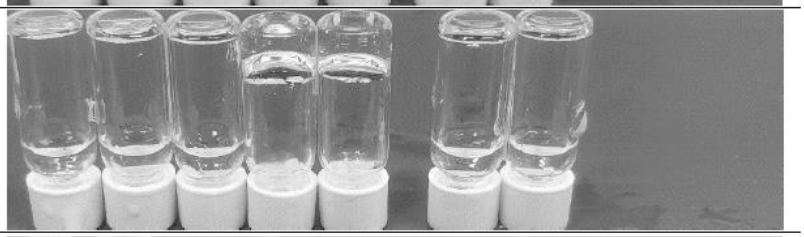
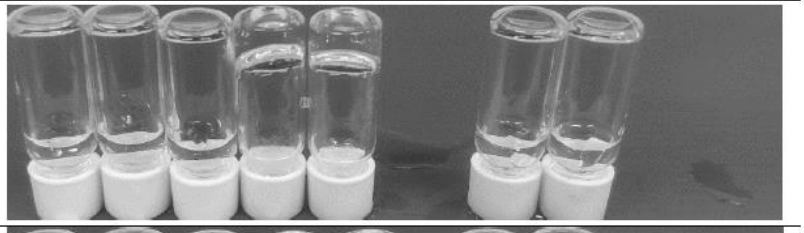
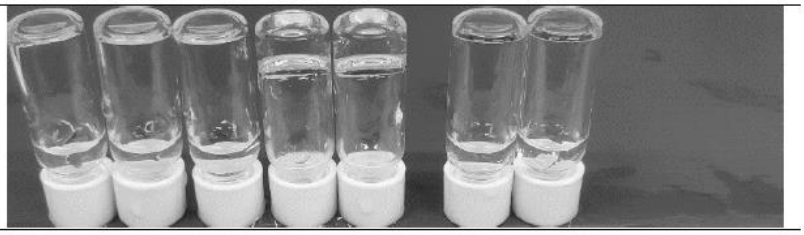
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 10d (continued)

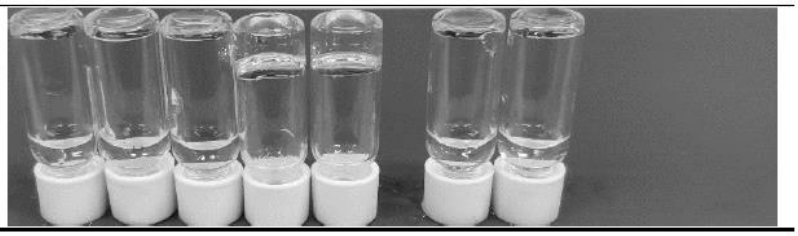
120 minutes	

Figure 10d (continued)

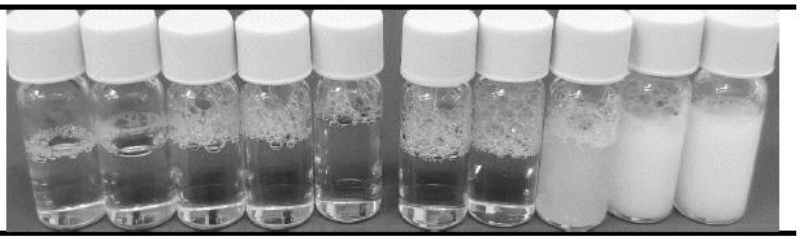
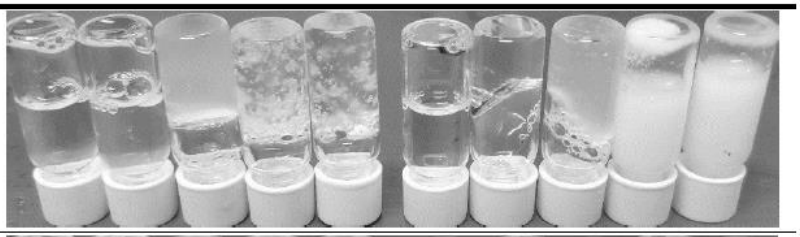
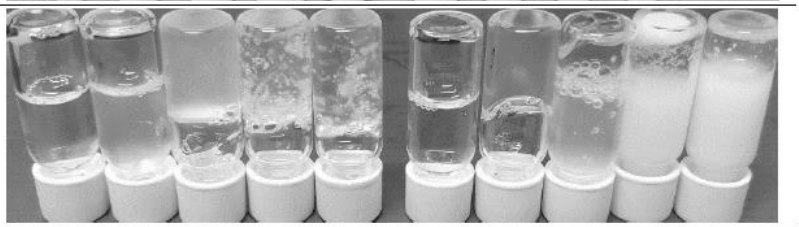
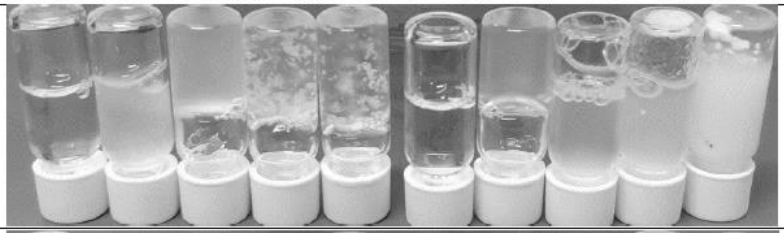
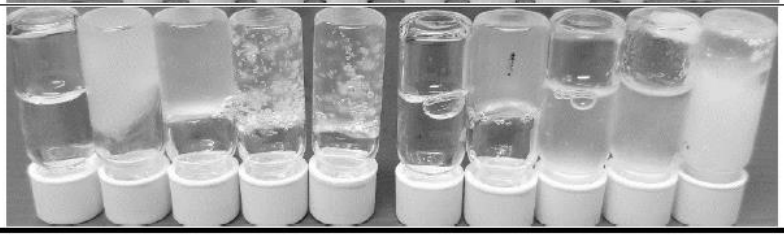
Group 5	Appearance
+ 0.5 % acetic acid	
After placing at 25 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 37 °C	

Figure 10e

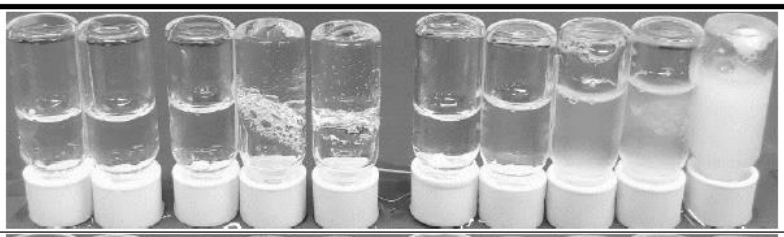
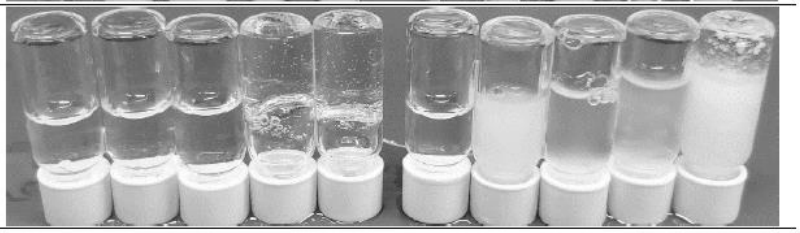
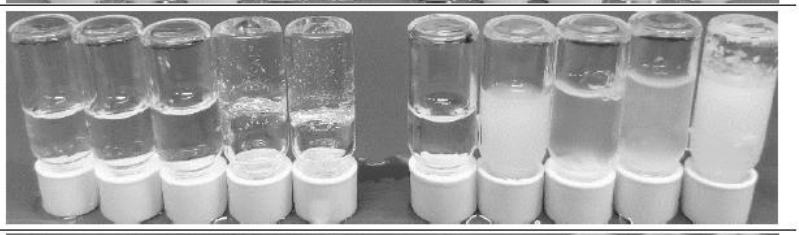
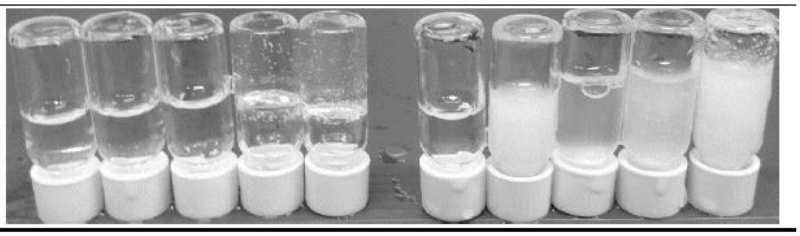
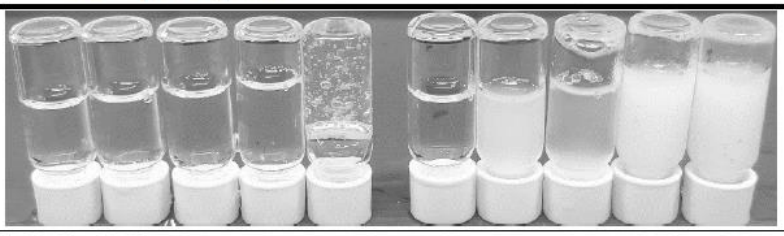
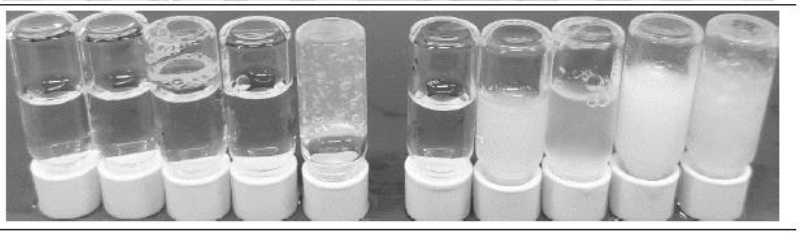
20 minutes	
30 minutes	
45 minutes	
60 minutes	
120 minutes	
After placing at 42 °C	
20 minutes	
30 minutes	

Figure 10e (continued)

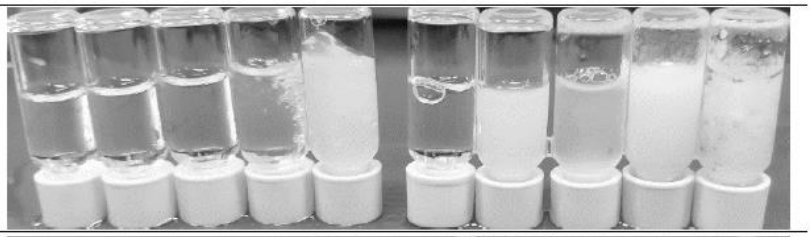
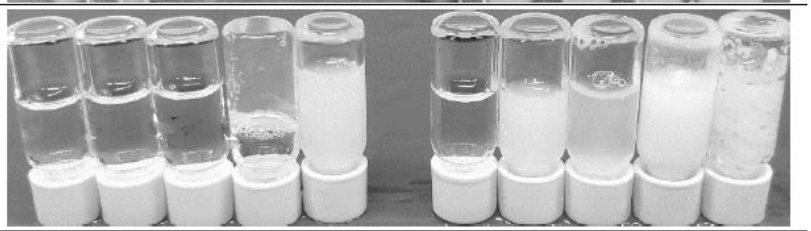
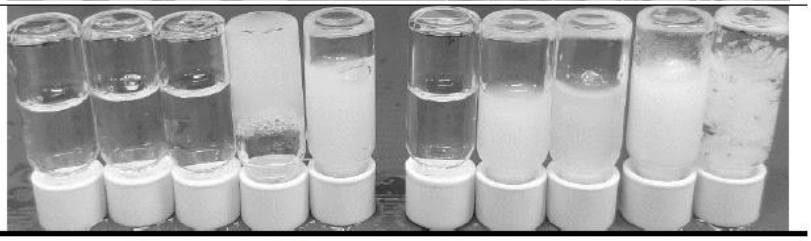
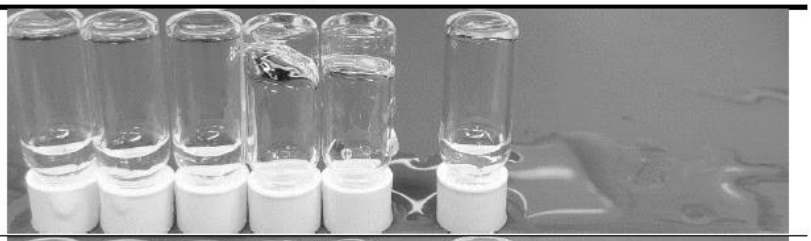
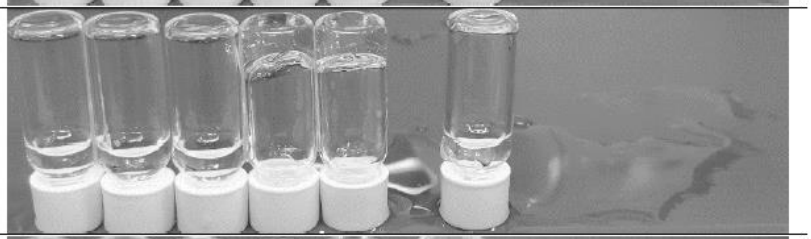
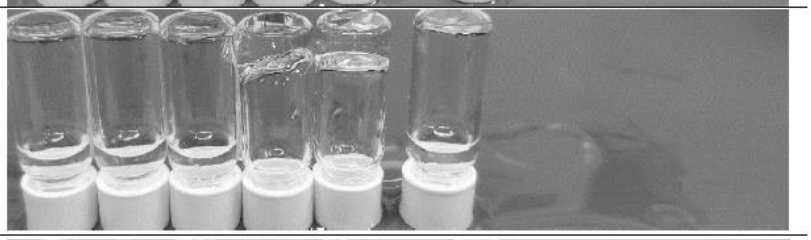
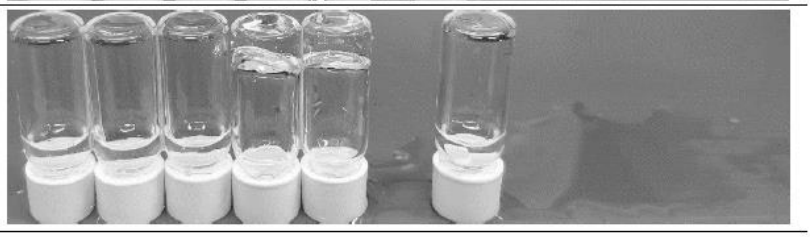
45 minutes	
60 minutes	
120 minutes	
After added to 0.9 % saline and placed at 37 °C	
20 minutes	
30 minutes	
45 minutes	
60 minutes	

Figure 10e (continued)

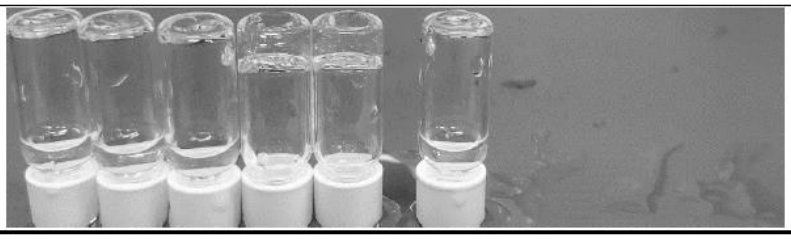
120 minutes	

Figure 10e (continued)

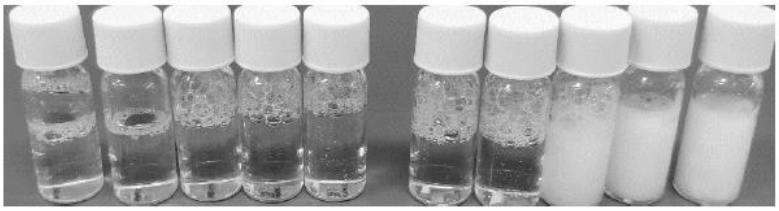
Group 6	Appearance
+ 0.6 % acetic acid	

Figure 10f