TANBEAD

Technical Investigation File

Extraction Performance Investigation by 6GM kits

February 2023

1. Purpose

To investigate extraction performance of different food matrices by using 6GM kits with M4810 or SLA-E13200 extractor

2. Sample

(1) Sweet corn (250 mg):

-minced sample + 250 uL incubation buffer (B871) + 10 uL PK, incubate at 60 degree for 10 min

-add 250 uL Isopropanol (IPA) and mix well, centrifuge at 13000 rpm for 10 min

-take 500 uL supernatant as sample

(2) Soybean (50 mg; dried samples should be sink in hot water for 30 min in advance) and Tofu (50 mg):

-minced sample + 500 uL incubation buffer (B871) + 10 uL PK, incubate at 60 degree for 10 min

-centrifuge at 13000 rpm for 10 min

-take 500 uL supernatant as sample

3. Instrument

(1) Extractor: Maelstrom 4810 or SLA-E13200

(2) NanoDrop One/One^{C} Spectrophotometer (Thermo Scientific™)

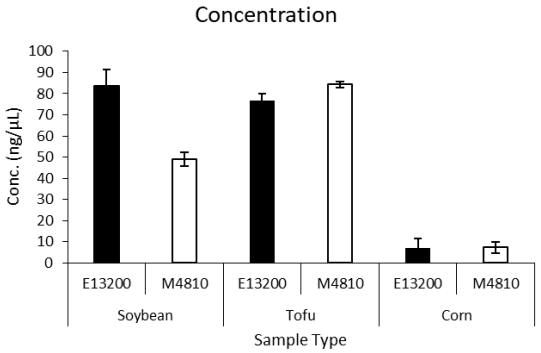
4. Program (modified from 6GM program)

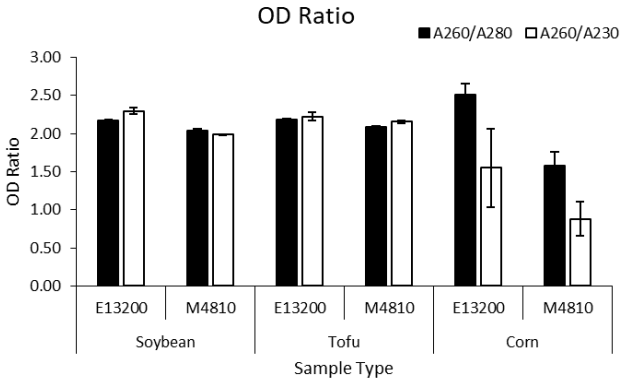
Program Name: 6GM						Model: SLA-E13200 series			
Step	Well	Temp (°C)	Mixing (M)	Collect (S)	Rod	Mixing speed	Volume (µL)	Pause	Vapor (M)
1	5	50	0	60	ON	Medium	800	OFF	0
2	1	50	10	60	ON	Low	1100	OFF	0
3	2	50	1	60	ON	Medium	800	OFF	0
4	5	50	1	60	ON	Medium	800	OFF	0
5	3	50	1	60	ON	Medium	800	OFF	0
6	4	50	1	60	ON	Medium	800	OFF	10
7	6	50	5	60	ON	Medium	100	OFF	0
8	3	NA	1	0	OFF	Medium	800	OFF	0
9	0	NA	0	0	OFF	Fast	0	OFF	0

Program Name: 6GM				Model: Maelstrom 4800 series			
Temp1	Temp2						
40	40						
Well	Name	Volume (µL)	Action	Mixing	Collect		
1/ 7	LB	1100	For.	Low	Low		
2/ 8	WB1	800	For.	Low	Low		
3/ 9	WB2	800	For.	Low	Low		
4/ 10	WB2	800	For.	Low	Low		
5/ 11	MB	800	For.	Low	Low		
6/ 12	EB	100	For.	Low	Low		
Step	Well	Temp (°C)	Mixing (M)	Mixing Speed (RPM)	Collect (M)	Vapor (M)	Pause
1	5		0	2500	0.5	0	Off
2	1	55	12	2500	0.5	0	Off
3	2		2	2500	0.5	0	Off
4	5		1	2500	0.5	0	Off
5	3		1	2500	0.5	0	Off
6	4		1	2500	0.5	10	Off
7	6	OFF	5	2500	1.5	0	Off
8	3		0.5	2500	0	0	Off

5. Results

Sample	Extractor	Conc (ng/µL)	A260/A280	A260/A230
Soybean	E13200	83.75	2.17	2.30
	M4810	48.91	2.04	1.99
Tofu	E13200	76.68	2.18	2.22
	M4810	84.39	2.09	2.15
Corn	E13200	7.12	2.50	1.55
	M4810	7.34	1.58	0.88





6. Conclusion

Based on our in-house testing results, the DNA extraction performance of different food matrices by the 6GM kit showed good quality with Maelstrom 4810 and SLA-E13200 except for the sample, corn. The DNA yield of soybean extracted by M4810 was varied in E13200, but the DNA yield of tofu extracted by M4810 seemed to be close to E13200.