

Supplementary materials

1. Methods

1.1. Chemical composition estimation

Moisture was determined according to AACC Method 44-15.02, Moisture-Air-Oven Methods ¹. Ash content was measured according to the AOAC method 923.03 ² using Box Muffle Furnace-SX2-4-10N. Crude protein content was determined by the Kjeldahl method according to AOAC method 981.10 ². The conversion factor for nitrogen to protein for fruits was 5.70. On the other hand, the conversion factor for nitrogen to protein for yogurt was 6.25 ³. The fat content of MDLP was determined by Soxhlet extraction (Soxhlet Extraction Fat Analyzer, SZF-06A, Zhejiang Top Cloud-Agri Technology Co., Ltd., China) with petroleum ether according to AOAC 996.06 method ². In the case of yogurt, the fat content in STY samples was determined using the Gerber method ⁴. Carbohydrate content was determined using Phenol–Sulfuric Acid method (colorimetric method) described by Albalasmeh et al.⁵. Total dietary fiber was determined according to AACC Method 32-07.01¹. Minerals were determined using an Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) described by Lima de Medeiros et al.⁶.

1.2. Color, Titratable acidity, pH estimation

The color indexes of MDLP were determined in terms of the L*, a*, and b* values on the Hunter scale. The L* (lightness to darkness, 100 to 0), a* (redness to greenness, 0 to 100 = red; -80 to 0 = green) and b* (yellowness and blueness, 0 to +70 = yellow; -100 to 0 = blue) as well as hue angle ($H^\circ = \tan^{-1} (b^*/a^*)$) and chroma ($C = (a^{*2} + b^{*2})^{1/2}$) were reported ⁷. Titratable acidity (TA) was determined according to AOAC method 942.15 ⁸ by titration with 0.1 M NaOH in the presence of a few drops of phenolphthalein as a color indicator. The results were expressed as a

percentage of citric acid for MDLP. The pH of MDLP was measured using a digital pH meter (Electronic Digital pH Meter, PHS-3CB, WANT Balance Instrument Co., Ltd, China).

1.3. Functional properties of MDLP

The Water retention capacity (WRC), solubility, and swelling (SW) of MDLP were determined according to Wang et al.⁹ with some modifications. The Water retention capacity (WRC), solubility, and swelling (SW) of MDLP were determined by dispersing 2 g of powder in distilled water for 24 h. WRC was assessed as the amount of water retained by insoluble fraction of the material (g water/g dry sample). Solubility was measured as a percentage of loss from the original sample (dry weight) after the recovery of insoluble material. SW was determined as increased bed volume after equilibration in an excess solvent. fat adsorption capacity (FAC) was measured by suspending 2 g samples in sunflower oil, and the result was expressed as g of oil/g dry sample. Bulk density (g/mL) was determined according to ¹⁰ by adding 4 g of MDLP into an empty 10 mL graduated cylinder and holding the cylinder on a vortex vibrator for 40s. The ratio of MDLP mass and MDLP volume occupied in the cylinder can determine the bulk density value of MDLP.

1.4. Extraction of total polyphenols

Extraction of total polyphenols content from freeze-dried MDLP was carried out according to ultrasound-assisted extraction method as described by Castro-López et al.¹¹. Firstly, 1 g of MDLP were mixed with 20 mL of 70% methanol containing 0.3% hydrochloric acid. The samples were placed in the dark bottle with a narrow neck and then immersed for 1 h at room temperature in an ultrasonic water bath (USA Lab Equipment, JPS-100A) at 40 kHz (100% power). Then, obtained extracts were centrifuged at 10,000 rpm for 10 min at 4 °C, and stored at −20 °C for

analyzing total polyphenols such as total phenolics, total flavonoids, total anthocyanins, and total proanthocyanidins contents.

2. Results

Table S1. Function properties of MDLP.

Function properties	Content (mean \pm SD)
Fiber (%)	0.70 \pm 0.05
Bulk density (g/mL)	0.85 \pm 0.03
Water retention capacity (WRC) (mL/g powder)	9.45 \pm 0.15
Water solubility (WS) %	16.69 \pm 0.66
Fat adsorption capacity (FAC) (g oil/ g powder)	2.53 \pm 0.13
Swelling index (SW) (mL/g)	3.78 \pm 0.16

The values are expressed as the mean \pm standard deviation (SD). Here, MDLP: *Melastoma dodecandrum* Lour. fruit powder, TA: Titratable acidity.

Table S2. Mineral's content (mg/Kg powder) of MDLP and STY-fortified with different concentrations of MDLP after 14th-day storage at 4 °C.

Minerals		MDLP	STY-control	STY+ 0.1% MDLP	STY+ 0.5% MDLP	STY+ 1% MDLP
Macro-elements (mean ± SD)	Phosphorus (P)	1740.00 ± 29.6	8934.00 ± 52.57 ^a	8943.00 ± 37.24 ^a	9078.00 ± 22.52 ^b	9120.00 ± 12.12 ^b
	Calcium (Ca)	7750.00 ± 117.0	10712.00 ± 61.21 ^a	11036.00 ± 50.23 ^b	11132.67 ± 68.60 ^a	11650.00 ± 67.01 ^c
	Magnesium (Mg)	1560.00 ± 11.2	904.00 ± 4.58 ^a	938.00 ± 6.24 ^b	953.00 ± 5.29 ^c	989.00 ± 608 ^d
	Potassium (K)	9160.00 ± 229.0	11650.00 ± 90.95 ^a	141760.00 ± 88.90 ^b	14522.00 ± 97.08 ^c	15512.00 ± 90.42 ^d
	Sodium (Na)	55.30 ± 2.4	3692.00 ± 95.39 ^a	3533.00 ± 25.36 ^b	3499.00 ± 31.58 ^c	3393.00 ± 24.64 ^d
Micro-elements (mean ± SD)	Zinc (Zn)	17.50 ± 0.36	29.52 ± 0.07 ^a	30.40 ± 0.06 ^b	30.48 ± 0.08 ^b	30.70 ± 0.03 ^c
	Manganese (Mn)	214 ± 1.81	1.88 ± 0.04 ^a	3.23 ± 0.07 ^b	7.47 ± 0.06 ^c	15.10 ± 0.11 ^d
	Copper (Cu)	6.97 ± 0.09	0.28 ± 0.00 ^a	0.29 ± 0.00 ^b	0.40 ± 0.01 ^c	0.52 ± 0.00 ^d
	Iron (Fe)	67.40 ± 1.76	8.46 ± 0.07 ^a	9.02 ± 0.05 ^b	9.23 ± 0.05 ^c	10.90 ± 0.07 ^d
	Selenium (Se)	0.13 ± 0.10	0.38 ± 0.05 ^a	0.41 ± 0.03 ^a	0.42 ± 0.06 ^a	0.45 ± 0.03 ^a
	Strontium (Sr)	26.90 ± 0.52	ND	ND	ND	ND
	Molybdenum (Mo)	0.05 ± 0.00	ND	ND	ND	ND
Heavy metals (mean ± SD)	Arsenic (As)	0.03 ± 0.00	ND	ND	ND	ND
	Lead (Pb)	0.03 ± 0.01	ND	ND	ND	ND
	Cadmium (Cd)	0.02 ± 0.00	ND	ND	ND	ND
	Chromium (Cr)	1.56 ± 0.21	ND	ND	ND	ND
	Tin (Sn)	0.02 ± 0.00	ND	ND	ND	ND

The values are expressed as the mean ± standard deviation (SD). Here, MDLP: *Melastoma dodecandrum* Lour fruit powder, STY: Stirred-type yogurt, and ND: Not Detected

Table S3. Sensory assessment of STY-fortified with different concentrations of MDLP during storage at 4 °C.

Simples	Storage period (days)	Sensory parameters (mean \pm SD)						
		Appearance	Color	Taste	Smell	Structure	Acidity	Acceptability
STY-control	1	6.78 \pm 1.04 ^a	6.96 \pm 1.02 ^a	6.57 \pm 1.24 ^{ab}	6.43 \pm 1.31 ^a	6.43 \pm 1.20 ^{ab}	6.52 \pm 1.27 ^a	6.91 \pm 0.95 ^{ab}
	14	6.48 \pm 1.16 ^a	6.70 \pm 1.06 ^a	6.39 \pm 1.16 ^a	6.43 \pm 1.28 ^a	6.43 \pm 1.20 ^{ab}	6.22 \pm 1.13 ^a	6.65 \pm 0.65 ^a
STY + 0.1% MDLP	1	6.74 \pm 1.10 ^a	7.04 \pm 0.98 ^a	6.43 \pm 1.16 ^{ab}	6.48 \pm 1.31 ^a	6.48 \pm 1.27 ^{ab}	6.52 \pm 1.27 ^a	6.96 \pm 1.07 ^{ab}
	14	6.61 \pm 1.16 ^a	6.78 \pm 1.09 ^a	6.26 \pm 1.14 ^a	6.39 \pm 1.34 ^a	6.22 \pm 1.24 ^a	6.39 \pm 1.34 ^a	6.87 \pm 1.18 ^{ab}
STY + 0.5% MDLP	1	6.78 \pm 0.80 ^a	7.26 \pm 1.05 ^a	7.17 \pm 1.19 ^b	7.09 \pm 1.16 ^a	7.09 \pm 1.31 ^b	6.70 \pm 1.06 ^a	7.48 \pm 0.99 ^b
	14	6.52 \pm 0.90 ^a	6.87 \pm 1.06 ^a	6.57 \pm 0.95 ^{ab}	6.65 \pm 0.98 ^a	6.65 \pm 1.27 ^{ab}	6.26 \pm 0.96 ^a	6.83 \pm 0.72 ^{ab}
STY + 1% MDLP	1	6.78 \pm 1.09 ^a	7.43 \pm 1.31 ^a	7.00 \pm 1.24 ^{ab}	6.87 \pm 1.14 ^a	6.96 \pm 1.26 ^{ab}	6.87 \pm 0.96 ^a	7.39 \pm 1.20 ^b
	14	6.70 \pm 1.15 ^a	6.96 \pm 1.15 ^a	6.70 \pm 1.06 ^{ab}	6.65 \pm 0.98 ^a	6.78 \pm 1.24 ^{ab}	6.43 \pm 1.04 ^a	7.22 \pm 0.95 ^{ab}

The values are expressed as the mean \pm standard deviation (SD). Here, MDLP: *Melastoma dodecandrum* Lour fruit powder, STY: Stirred-type yogurt

Fig. S1. Schematic diagram of the preparation of MDLP and MDLP-fortified stirred-type yogurt.

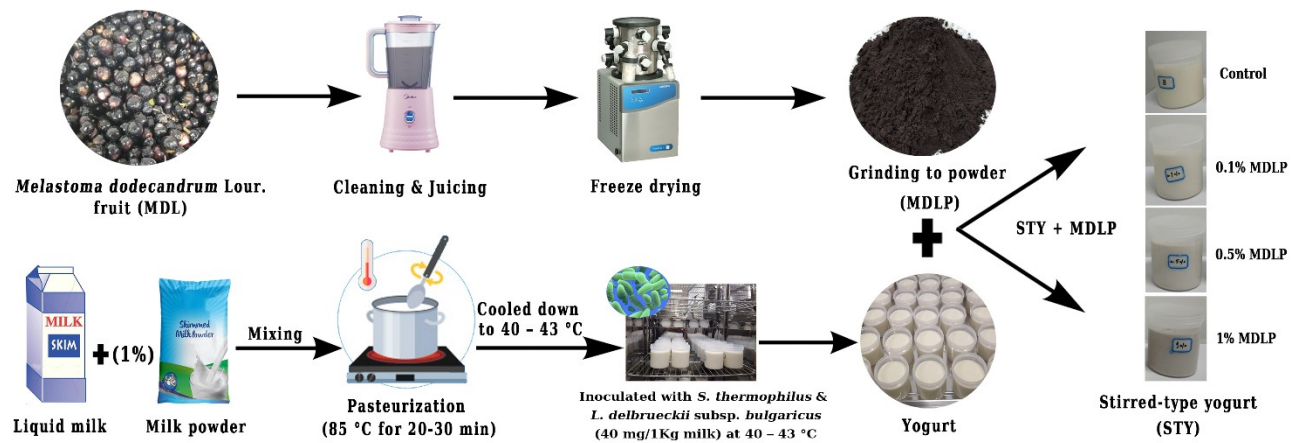


Fig. S2. Photographs of (A) *Melastoma dodecandrum* Lour (MDL) fruits, (B) MDL fruit powder (MDLP), and (C) stirred-type yogurt fortified with different concentrations of MDLP (0, 0.1, 0.5, and 1%) after 1st-day of storage at 4 °C.



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