

Table S1. Polyphenol relative contents in M, GM and FGM by UPLC-MS/MS

Compounds	Class I	Relative Content		
		M	GM	FGM
1-O-Sinapoyl- β -D-glucose	Phenolic acids	29951.47997	90679.808	39889.14911
2,3-Dihydroxybenzoic Acid*	Phenolic acids	504257.6561	1022422.143	5011606.644
2,5-Dihydroxybenzoic acid; Gentisic Acid*	Phenolic acids	181558.458	76782.6988	1022553.903
2-(Formylamino)benzoic acid	Phenolic acids	1656370.002	1929865.319	325371.6696
2-Hydroxy-3-phenylpropanoic acid	Phenolic acids	10917.94499	523833.9406	15073023.35
2-Hydroxybenzaldehyde (Salicylaldehyde)	Phenolic acids	15649.05489	36310.52375	53311.22217
2-Hydroxycinnamic acid*	Phenolic acids	19317016.02	21029786.72	3942835.954
2-Phenyloxirane	Phenolic acids	347299.2403	41549806.94	31213898.63
3,4-Dihydrocoumarin	Lignans and Coumarins	51368.60828	34903.46368	19255.3017
3,4-Dihydroxybenzoic acid (Protocatechuic acid)*	Phenolic acids	386976.9941	226070.2531	1577641.647
3,5,7-Trihydroxyflavanone (Pinobanksin)*	Flavonoids	2994735.596	767683.2849	865643.7426
3-(4-Hydroxyphenyl)-propionic acid	Phenolic acids	129384.2779	413903.8845	11609628.85
3-Hydroxycinnamic Acid*	Phenolic acids	5297475.828	5182362.315	642757.4818
3-O-Acetylpinobanksin	Flavonoids	239531.2129	14292.97151	84072.18242
3-[(1-Carboxyvinyl)oxy]benzoic acid	Phenolic acids	70468.82657	293227.1301	825324.9406
3-hydroxyphenylacetic acid*	Phenolic acids	20424.9348	22281.34553	24137.06853
4-Hydroxybenzoic acid	Phenolic acids	3742036.029	4358313.873	3425044.74
4-Hydroxyphenylacetic acid*	Phenolic acids	20424.9348	22281.34553	24137.06853
5-O-p-Coumaroylquinic acid	Phenolic acids	445583.2387	446004.1928	44450.17
7-Hydroxycoumarin;Umbelliferone	Lignans and Coumarins	47109.87126	14349.81376	16189.30913
Anthranilic Acid	Phenolic acids	54329.59262	88331.67442	274361.9971
Apigenin-6-C-glucoside (Isovitexin)*	Flavonoids	1069777.129	1037626.326	2871689.49
Apigenin-7-O- glucoside(Cosmosiin)*	Flavonoids	500122.0134	114443.3076	166005.7126
Apigenin-7-O-neohesperidoside (Rhoifolin)*	Flavonoids	61072.88328	113500.1896	83747.67125
Apigenin-8-C-Glucoside (Vitexin)*	Flavonoids	1223801.238	1002113.501	3173181.277
Apigenin; 4',5,7- Trihydroxyflavone*	Flavonoids	117597.3938	95639.82838	159456.5445
Arbutin	Phenolic acids	87699.22552	44682.76903	29469.28731
Asperuloside	Phenolic acids	41482.83754	100438.8378	251229.5468
Benzoic acid	Phenolic acids	136731.3601	148833.8661	487993.7425
Caffeic acid	Phenolic acids	108243.4804	221562.5642	136289.7817

Caffeic aldehyde	Phenolic acids	4248009.723	4465368.917	712003.1992
Chlorogenic acid (3-O-Caffeoylquinic acid)*	Phenolic acids	232169.6116	65580.21817	97589.96724
Cinnamic acid	Phenolic acids	84762.8238	3929154.553	197058.1386
Coniferyl alcohol	Phenolic acids	30601.57222	49808.50525	144143.9869
Eriodictyol (5,7,3',4'-Tetrahydroxyflavanone)	Flavonoids	53276.43005	19066.00925	34282.1027
Eugenol	Phenolic acids	2001661.604	2100901.657	313474.2413
Ferulic acid*	Phenolic acids	2812457.777	7863336.271	3738790.589
Galangin (3,5,7-Trihydroxyflavone)	Flavonoids	444586.0493	405037.6006	497888.2179
Genistein*	Flavonoids	101280.6397	89502.96234	136158.0948
Hesperetin	Flavonoids	132716.0684	37650.33603	57474.96596
Hesperetin-7-O-glucoside	Flavonoids	111281.1988	24628.35272	19541.43187
Homoeriodictyol	Flavonoids	209826.5851	63349.55197	93928.69698
Hydrocinnamic acid	Phenolic acids	9009.715344	33552.41456	608521.2315
Isosakuranetin (5,7-Dihydroxy-4'-methoxyflavanone)	Flavonoids	9711.006589	8746.019143	11067.39319
Kaempferol-3-O-galactoside (Trifolin)*	Flavonoids	461210.4106	11790.80567	10488.51055
Kaempferol-3-O-glucoside (Astragalin)*	Flavonoids	216752.1943	60993.85037	33537.7316
Luteolin (5,7,3',4'-Tetrahydroxyflavone)	Flavonoids	64855.20417	23261.2695	29327.52681
Luteolin-7-O-glucoside (Cynaroside)*	Flavonoids	612174.5344	276339.3835	12296.00472
Luteolin-7-O-glucuronide	Flavonoids	8341.295167	59121.92722	47707.46249
Matairesinol	Lignans and Coumarins	21352.42379	26055.23589	166211.4533
Naringenin (5,7,4'-Trihydroxyflavanone)*	Flavonoids	3258460.179	758144.5858	811957.5125
Naringenin chalcone; 2',4,4',6'-Tetrahydroxychalcone	Flavonoids	1948297.089	405695.7283	519889.398
Naringenin-7-O-glucoside (Prunin)*	Flavonoids	45673.69975	13966.1733	14478.01133
Phthalic acid	Phenolic acids	57106.33512	292144.7753	266709.6002
Pinocembrin (Dihydrochrysin)	Flavonoids	11096.50716	15592.02219	4878.121795
Pinoresinol*	Lignans and Coumarins	289672.1205	88799.02489	251325.7133
Podophyllotoxin	Lignans and Coumarins	374533.1768	302511.0876	207679.3129
Pyrocatechol	Phenolic acids	47661.63594	43732.8688	84675.88187
Quercetin-3-O-glucoside (Isoquercitrin)	Flavonoids	94120.58193	6633.808472	13253.23103
Quercetin-3-O-rutinoside (Rutin)	Flavonoids	111134.9953	13044.20183	36265.77591
Salidroside	Phenolic acids	200080.7393	689753.31	94964.68626

Sinapic acid	Phenolic acids	20757.69642	218740.2043	147843.564
Sinapinaldehyde	Phenolic acids	608550.8822	438100.9455	342516.5035
Sinapoyl malate	Phenolic acids	89306.40956	126540.0998	78730.19545
Syringetin; 3,5,7,4'-Tetrahydroxy-3',5'-dimethoxyflavone	Flavonoids	36904.74587	24580.36217	23725.81383
Terephthalic acid*	Phenolic acids	430529.9616	2523337.663	2828667.868
Trans-5-O-(p-Coumaroyl)shikimate	Phenolic acids	103753.6555	1019238.094	190278.9745
Tyrosol; 4-Hydroxyphenylethanol	Phenolic acids	12888.99368	26064.77433	113897.6837
Vitexin-2"-O-glucoside	Flavonoids	1315365.707	282788.9985	210278.8184
Vitexin-2"-O-rhamnoside	Flavonoids	73374.17783	112526.2765	96363.88427
p-Coumaric acid	Phenolic acids	3959737.937	3508830.7	509647.5204
p-Coumaryl alcohol	Phenolic acids	86654.5524	168132.2779	591936.2001
α -Hydroxycinnamic Acid*	Phenolic acids	5297475.828	5182362.315	642757.4818

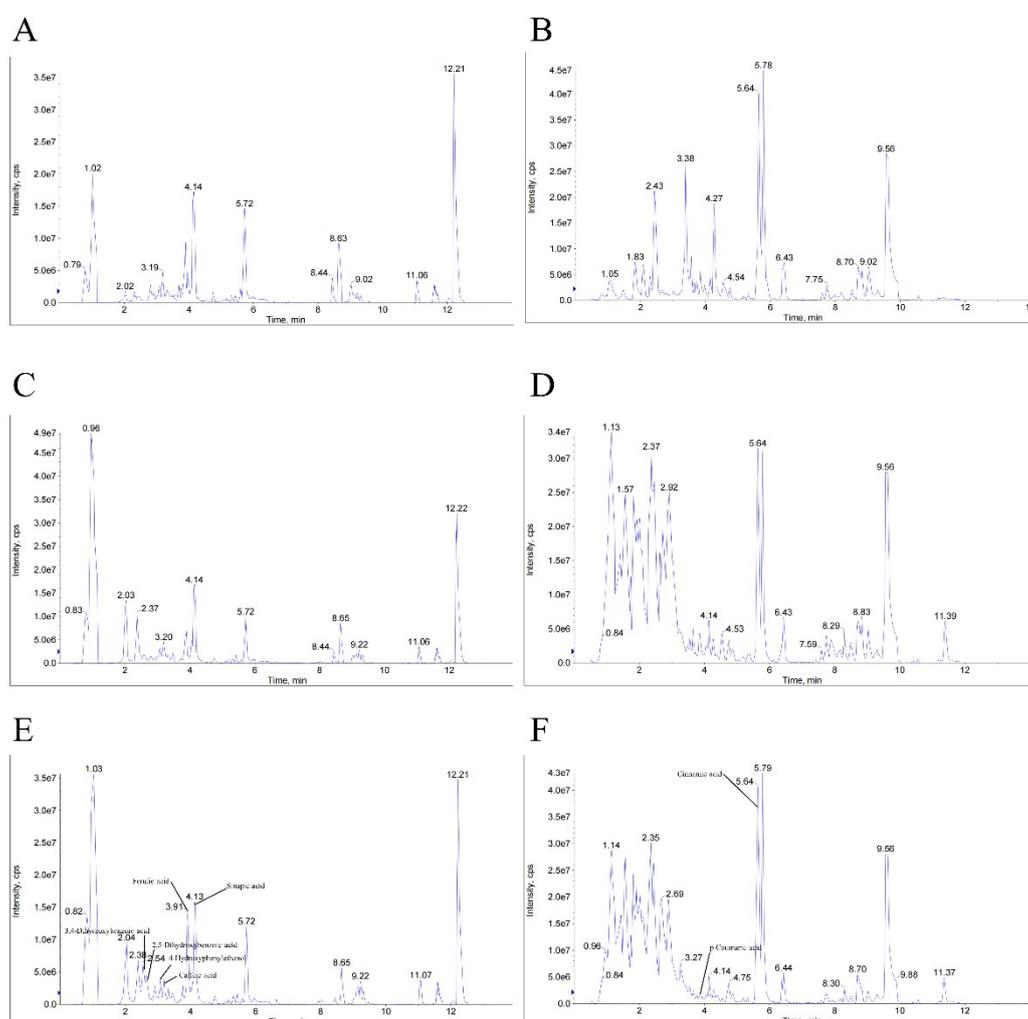


Figure S1. Total ion chromatograms of M-n (A) M-p (B), GM-n (C), GM-p (D), FGM-n (E), and FGM-p (F). N represents the negative ion mode and p represents the positive ion mode.

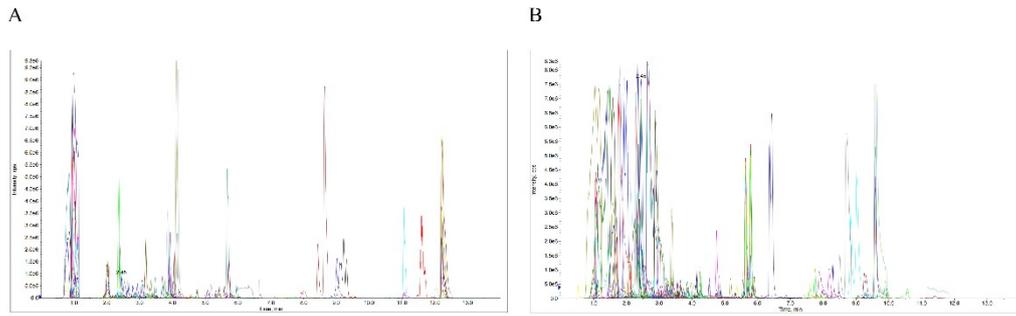


Figure S2. Multimodal map of MRM metabolite detection of mix samples-n (A) and mix samples -p (B). N represents the negative ion mode and p represents the positive ion mode. Different colors represent different metabolites.

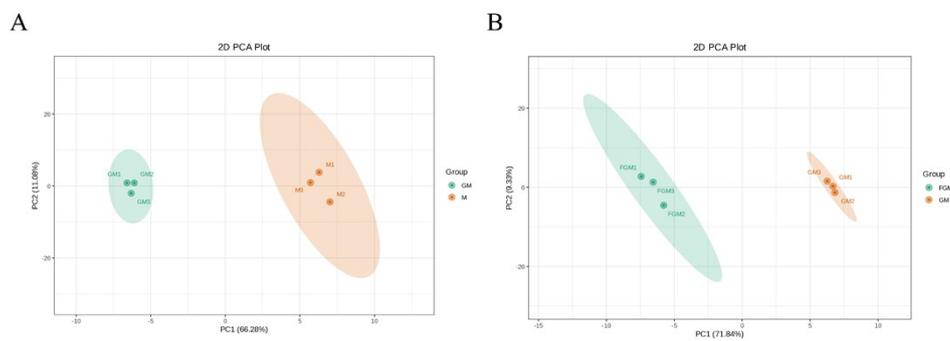


Figure S3. Principal component analysis (PCA) of different millet samples after germination and fermentation. (A) The PCA between GM and M. (B) The PCA between FGM and GM.

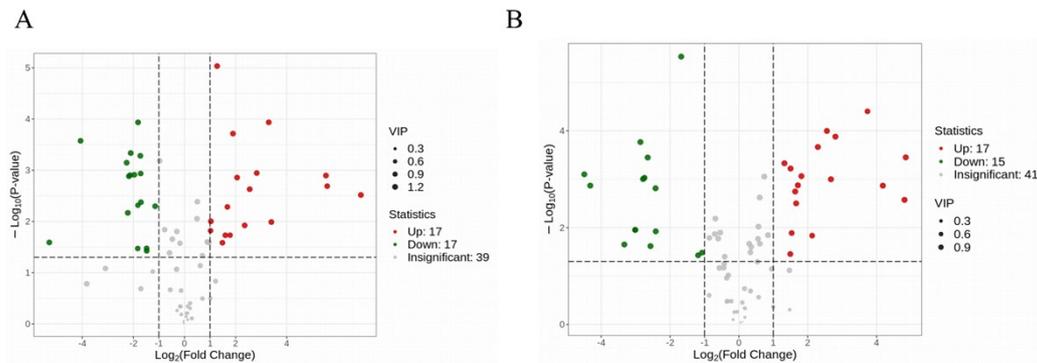


Figure S4. Volcanic map of metabolites after germination and fermentation. (A) The differentiated metabolites between GM and M. (B) The differentiated metabolites between FGM and GM.

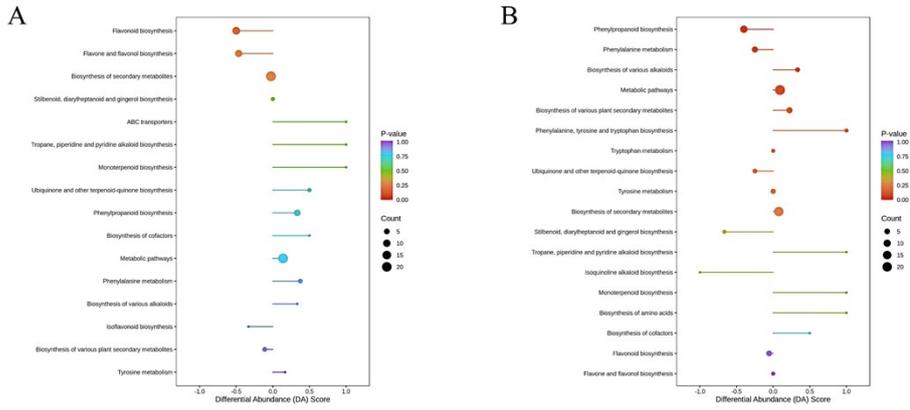


Figure S5. Affected metabolic pathways after germination (A) and fermentation (B) in millets based on KEGG database.