

## Supplementary Materials

# Formation of Sulforaphane and Iberin Products from Thai Cabbage Fermented by Myrosinase-Positive Bacteria

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**Table S1.** Mass spectral (MS) data of metabolites detected in this work.

Substrate	Degradation products <sup>a</sup>	MS spectra data m/z	T <sub>R</sub> (min)*
Sinigrin (SNG, 2)	Allyl-ITC (AITC)	99 (M <sup>+</sup> ), 72, 65	6.9
Glucoiberin (GIB, 3)	Iberin nitrile (IBR NIT)	131 (M <sup>+</sup> ), 115, 69, 61	17.9
	Iberin (IBR)	163 (M <sup>+</sup> ), 130, 116, 100, 72	24.9
Glucoraphanin (GRP, 4)	Sulforaphane (SFN)	177 (M <sup>+</sup> ), 160, 115, 72	28.9
4-Hydroxy Glucobrassicin (GBS, 5)	Indole-3-acetonitrile (IAN)	155 (M <sup>+</sup> ), 130, 101, 77, 51	30.2
NA	Palmitic acid	256 (M <sup>+</sup> ), 213, 129, 73, 60	33.3
NA	Linoleic acid	280 (M <sup>+</sup> ), 193, 151, 69, 55	36.9

\*Retention time at which degradation product was eluted as detected by GC-MS analysis. NA, not available; n.d., not determined; ND, not detected.

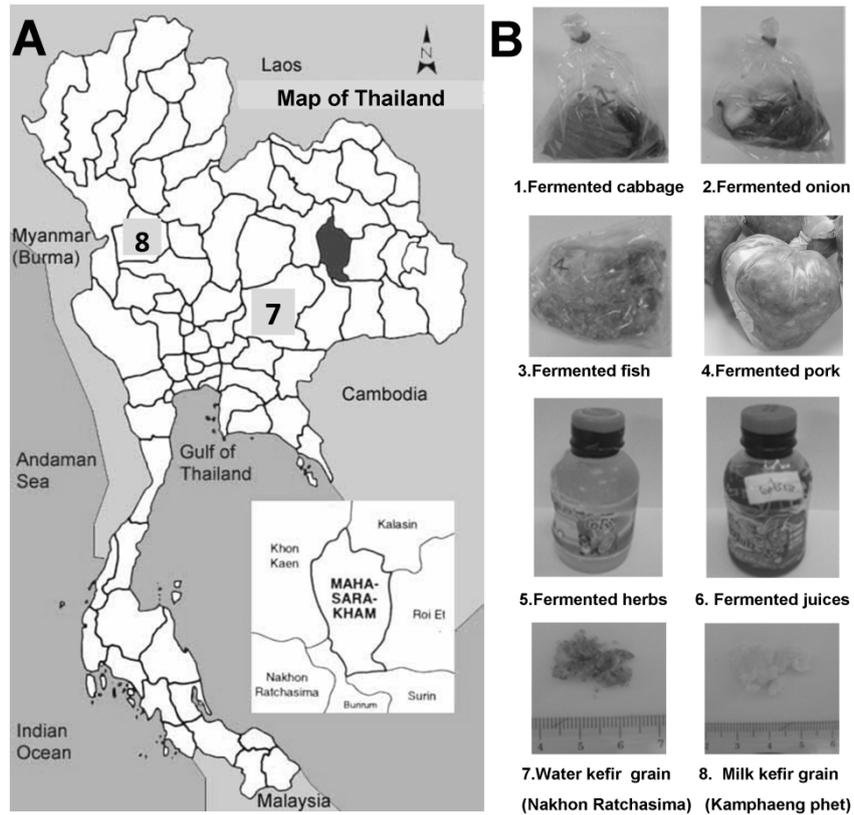
**Table S2.** Percentage (%) production of degradation products upon glucosinolate metabolism during cabbage fermentation with/without induced bacterial culture over 3 days.

Samples	% Production		
	IBN + IBR	SFN	IAN
N0	46.6	69.6	92.5
N1	17.0	79.2	30.3
N2	11.4	43.0	23.8
N3	7.1	34.1	19.1
EC0	63.9	45.2	74.6
EC1	18.0	69.7	39.2
EC2	14.2	82.7	32.0
EC3	8.5	73.1	15.1
EX0	62.0	61.9	71.9
EX1	40.4	86.7	7.1
EX2	20.2	71.3	15.0
EX3	19.7	52.1	19.3
EC2 solid	5.4	14.2	11.0
EC2 liquid	8.3	54.6	18.8

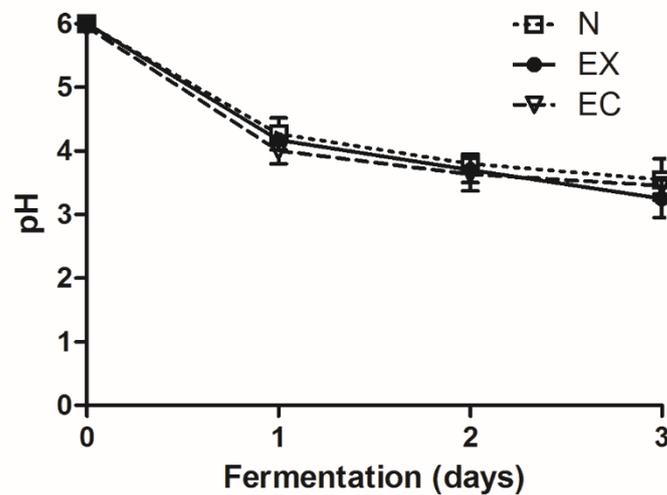
N = Non-induced with bacteria for 0-3 days (N0, N1, N2, N3); EC = induced with EC for 0, 1, 2, 3 days (EC0, EC1, EC2, EC3); EX = induced with EX for 0, 1, 2, 3 days (EX0, EX1, EX2, EX3); EC2 solid = Solid portion of fermented cabbage of EC at day 2; EC2 liquid = Liquid portion of fermented cabbage of EC at day 2.

**Table S3.** ITC products from different fermented cabbage products from different countries.

Sample	GSL profiles	ITC products	pH at the end of fermentation	Fermentation method
Thai picked cabbage (white cabbage from Khon Kaen, Thailand)	Glucoiberin Glucoraphanin 4-hydroxy glucobrassicin	Iberin nitrile (IBN) Iberin (IBR) Sulforaphane (SFN) Indole-3-acetonitrile (IAN)	3.25-3.55 (3 days at 25 °C)	Spontaneous and induced fermentation by <i>Ec. casseliflavus</i> or <i>Ent. xiangfangensis</i> (This work)
Sauerkraut (white cabbage cultivars Bronco and Megaton from Spain)	Sinigrin Glucoiberin Glucoraphanin	SFN (39-49 µmol/100g DW) IBR IBN allyl nitrile (ANIT) allyl isothiocyanate (AITC)	3.27 - 3.67 (7 days at 25 °C)	<i>Lactobacillus plantarum</i> (CECT 748) and <i>Leuconostoc mesenteroides</i> (CECT 219) by the Spanish Type Culture Collection (CECT, Valencia, Spain) [31]
Sauerkraut ( <i>Brassica oleracea</i> L. var. capitata cv. Lennox from Finland)	Sinigrin Glucoiberin Glucobrassicin	AITC ANIT SFN I3C	3.9 (3 days at 20 °C)	Spontaneous vs <i>Leuconostoc mesenteroides</i> and <i>Pediococcus dextrinicus</i> (1:1) [32]
Sauerkraut ( <i>Brassica oleracea</i> L. var. capitata cv. Storema RZ and cv. Lennox from Germany)	Glucoiberin Sinigrin Glucobrassicin Glucoraphanin 4-Methoxy glucobrassicin	Ascorbigen (13.0 µmol/100 g FW) I3C (4.52 µmol/100g FW)	4 (9 days at 20 °C)	Spontaneous [33]
Korean kimchi (white cabbage from Korea)	NA	2.2 ppm SFN (lower than fresh cabbage) 3-butenyl ITC 4-methylthiobutyl	4.53 (3 days at 20 °C)	Spontaneous [34]
Korean cabbage ( <i>Brassica campestris</i> L. ssp. <i>pekinensis</i> , cultivar; 'Winter pride')	Gluconasturtiin Glucobrassicinapin 4-methyl-pentyl GSL Gluconapin	2-phenylethyl ITC 4-pentenyl ITC 4-methylpentyl ITC 3-Butenyl ITC	No fermentation	Fresh cabbage [35]



**Figure S1.** Origins of Thai fermented foods and beverages and their physical appearances. (A) Location of Mahasarakham Province where most fermented samples were collected and Nakhon Ratchasima and Kamphaeng phet. (B) Thai local fermented foods and beverages used in this study.



**Figure S2.** The pH values of fermented cabbage with/without bacterial induction over 3 days. N = Non-induced with bacteria; EC = induced with EC; EX = induced with EX.