

Supplementary Materials:

# Degradation of Bisphenol A by *Bacillus subtilis* P74 Isolated from Traditional Fermented Soybean Foods

Young Kyoung Park and Young-Wook Chin \*

Research Group of Traditional Food, Korea Food Research Institute, Iseo-myeon,  
Wanju-gun 55365, Jeollabuk-do, Republic of Korea

\* Correspondence: ywchin@kfri.re.kr; Tel.: +82-63-219-9317

Table S1. BPA-degrading ability of microorganisms isolated from Korean traditional fermented soybean products.

Species	N <sup>a</sup>	BPA degradation rate (%)
<i>Bacillus aerius</i>	1	31.0 <sup>b</sup>
<i>Bacillus amyloliquefaciens</i>	13	22.7 ± 13.1 <sup>c</sup> (7.6 – 54.0)
<i>Bacillus atrophaeus</i>	8	49.9 ± 7.2 (41.8 – 64.4)
<i>Bacillus coagulans</i>	2	36.9 ± 46.9 (3.7 – 70.1)
<i>Bacillus glycinifermentans</i>	2	25.4 ± 14.5 (15.1 – 35.7)
<i>Bacillus licheniformis</i>	14	43.7 ± 13.4 (6.2 – 54.5)
<i>Bacillus paralicheniformis</i>	3	14.3 ± 15.2 (-3.3 – 23.9)
<i>Bacillus safensis</i>	1	24.7
<i>Bacillus siamensis</i>	2	30.4 ± 4.9 (26.9 – 33.9)
<i>Bacillus sonorensis</i>	6	64.8 ± 4.8 (58.8 – 70.9)
<i>Bacillus spp.</i>	23	33.2 ± 12.2 (10.4 – 58.0)
<i>Bacillus sporothermodurans</i>	1	41.8
<i>Bacillus subtilis</i>	48	43.6 ± 18.3 (14.2 – 92.1)
<i>Bacillus thermoamylovorans</i>	2	29.1 ± 41.0 (0.0 – 58.1)
<i>Bacillus vallismortis</i>	1	27.9
<i>Bacillus velezensis</i>	1	19.9
<i>Brevibacterium frigoritolerans</i>	1	12.0

<sup>a</sup> The number of strains tested.

<sup>b</sup> The value obtained from a single strain.

<sup>c</sup> Mean ± standard deviation (the range from minimum to maximum).

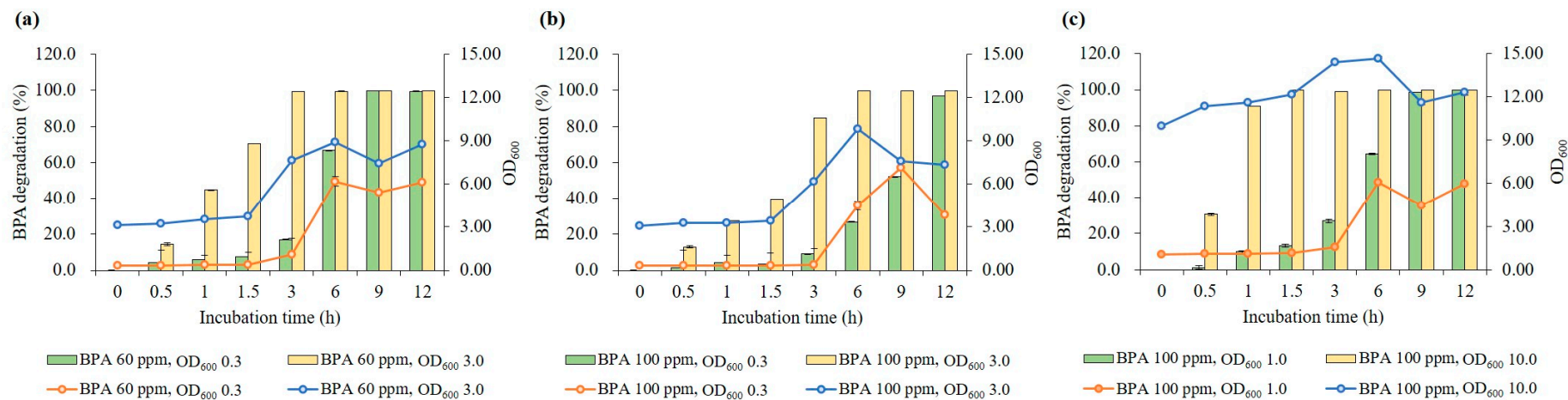


Figure S1. Performance of BPA degradation by *B. subtilis* P74 in the flask culture containing (a) 60 mg/L and (b, c) 100 mg/L BPA at incubation temperatures of 40°C. The data represent mean  $\pm$  standard deviation from three measurements of harvested samples.

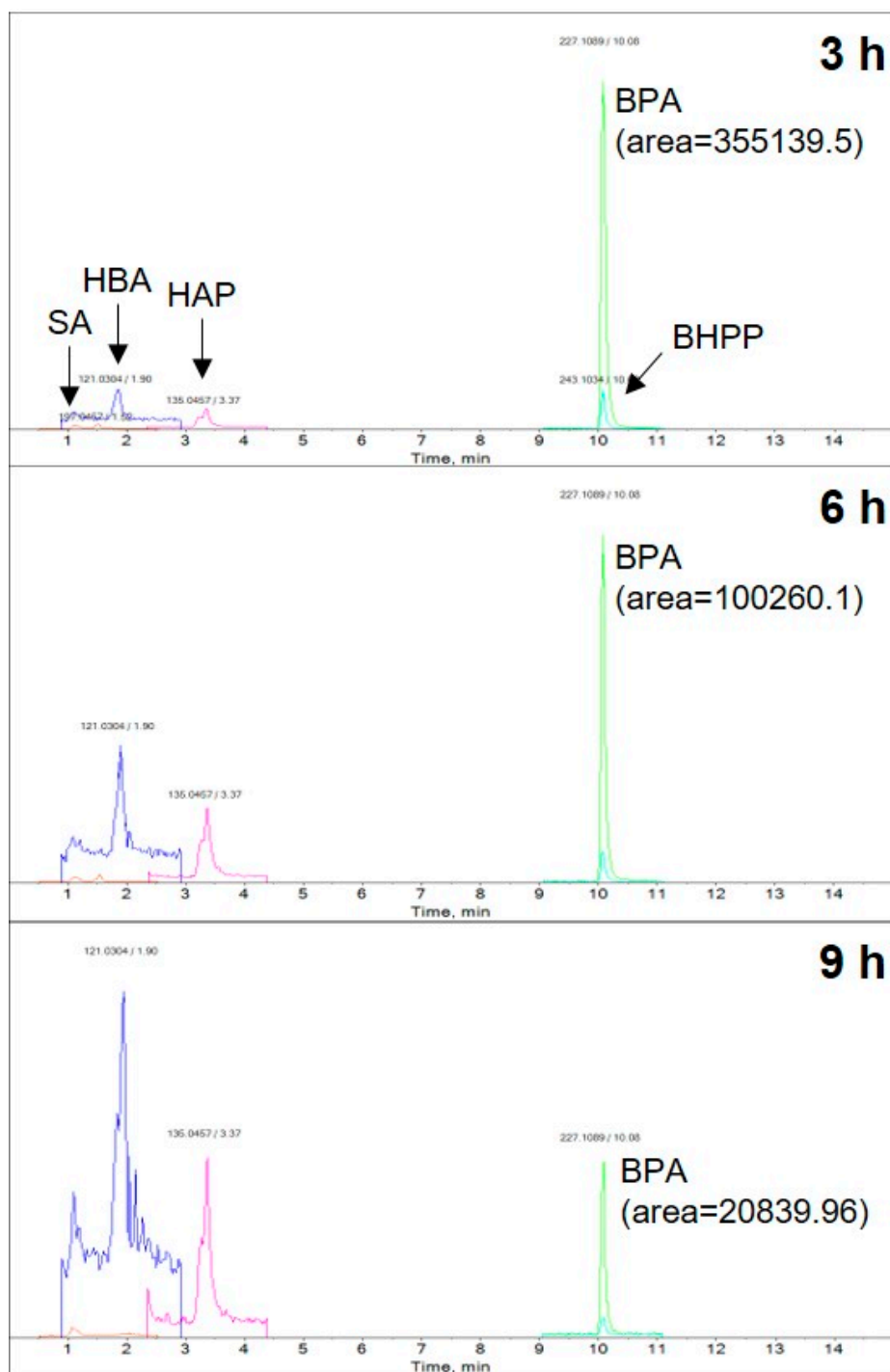


Figure S2. Ion chromatogram of the BPA degradation by *B. subtilis* P74 during the fermentation. Candidate metabolites were detected; 4-hydroxybenzaldehyde (HBA), 4-hydroxyacetophenone (HAP), syringic acid (SA), and 1,2-bis(4-hydroxyphenyl)-2-propanol (BHPP)

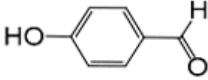
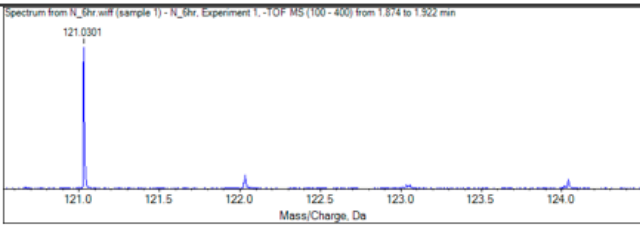
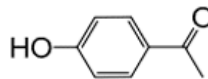
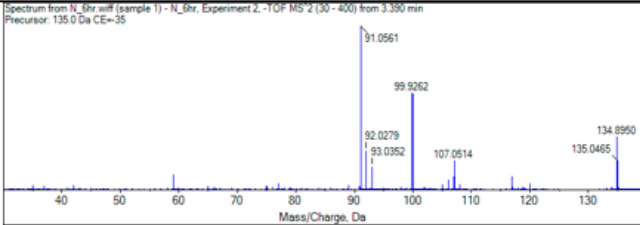
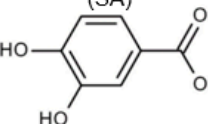
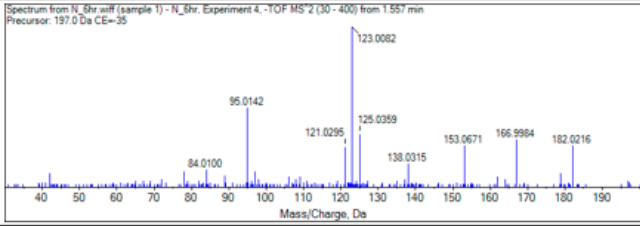
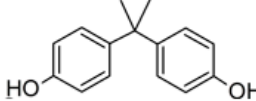
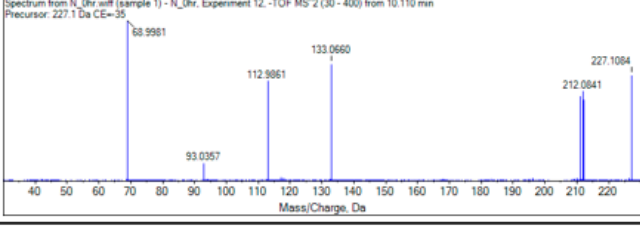
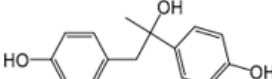
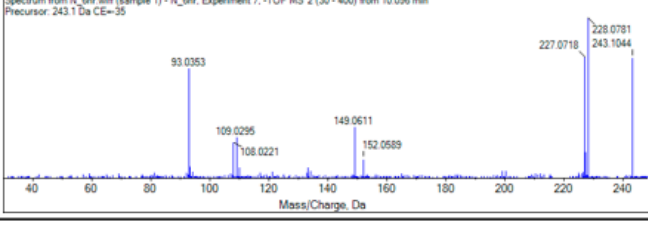
m/z RT	Formula Finder results	Candidate metabolites	MS spectrum
121.0304 1.90	C <sub>7</sub> H <sub>6</sub> O <sub>2</sub>	4-Hydroxybenzaldehyde (HBA) 	
135.0457 3.37	C <sub>8</sub> H <sub>8</sub> O <sub>2</sub>	4-Hydroxyacetophenone (HAP) 	
197.0457 1.52	C <sub>9</sub> H <sub>10</sub> O <sub>5</sub>	Syringic acid (SA) 	
227.1089 10.08	C <sub>15</sub> H <sub>16</sub> O <sub>2</sub>	Bisphenol A (BPA) 	
243.1034 10.08	C <sub>15</sub> H <sub>16</sub> O <sub>3</sub>	1,2-Bis(4-hydroxyphenyl)- 2-propanol (BHPP) 	

Figure S3. MS/MS spectrum and structure of the candidate metabolites found during BPA degradation by *B. subtilis* P74.