

Supplementary Information

***Acinetobacter* sp.DW-1 immobilized on polyhedron hollow polypropylene balls and analysis of transcriptome and proteome of the bacterium during phenol biodegradation process**

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1. Supplementary methods

1.1 Antimicrobial susceptibility test

19 antibiotics: kanamycin(K; 30 µg), streptomycin(S; 10 µg), tetracycline(TE; 30 µg), ampicillin(AMP; 10 µg), chloramphenicol (C; 30 µg), ciprofloxacin(CIP; 5 µg), meropenem(MEM; 10 µg), cephalothin(KF; 30 µg), tobramycin(TOB; 10 µg), gentamicin(CN; 10 µg), ceftazidime(CAZ; 30 µg), cefotaxime(CTX; 30 µg), imipenem(IPM; 10 µg), cefepime(FEP; 30 µg), trimethoprim-sulfamethoxazole (SXT; 23.75/1.25 µg), ampicillin(AMP; 10 µg), levofloxacin(LEV; 5 µg), aztreonam(ATM; 30 µg).

1.2 Phenol degradation by free cells and immobilized cells

Acinetobacter sp. DW-1 cells were inoculated into R2A fluid nutrient medium for 24 h; then, 100 µL of R2A-preculture was respectively inoculated into two Erlenmeyer flasks (500 mL) containing MSM supplemented with phenol (4 mM) as the sole carbon source. Among of them, one Erlenmeyer flask with polyhedron hollow polypropylene balls, the other without polyhedron hollow polypropylene balls. After static cultivation culture for 96 h, 1 mL of medium was withdrawn from Erlenmeyer flask which without polyhedron hollow polypropylene balls, the biomass concentration of free cells was determined with a Bradford Protein Assay Kit (Sangon, Shanghai, China). In the other Erlenmeyer flask, biofilm obtained from polyhedron hollow polypropylene balls after ultrasonication was diluted with PBS buffer at an appropriate. Similarly, the biomass concentration of the biofilm was also detected as above. Equal amounts of free cells and immobilized cells were inoculated to the bottles containing MSM supplemented with phenol (4 mM), and then performed to degradation phenol.

2. Supplementary Figures

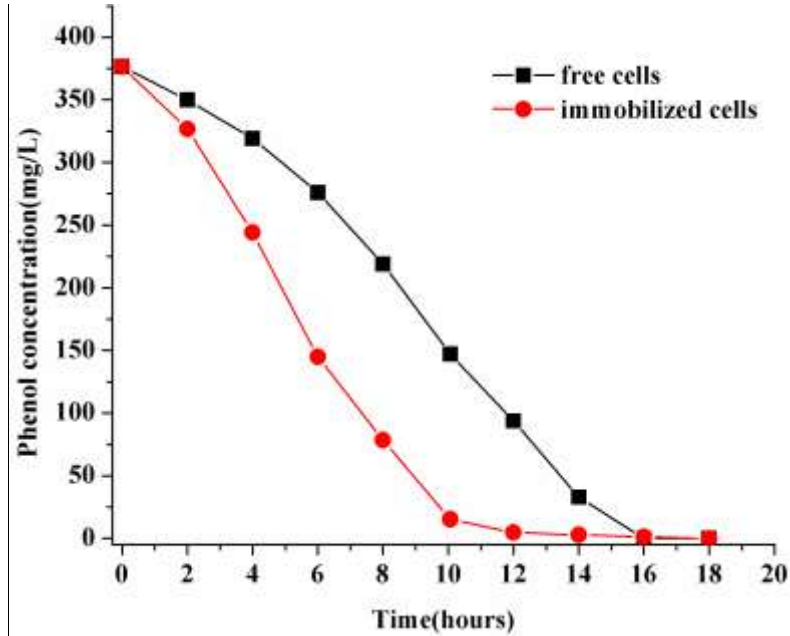


Fig.S1 Phenol degradation by free cells and immobilized cells of *Acinetobacter* sp. DW-1

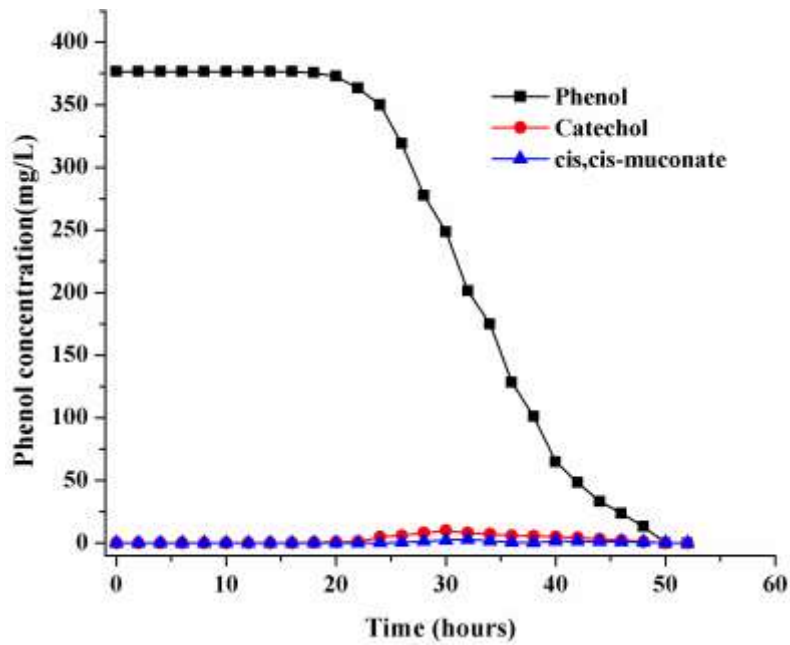


Fig.S2 Detection of phenol, catechol and cis,cis-muconate during biodegradation by *Acinetobacter* sp. DW-1

3. Supplementary Tables

Table S6 Primers for RT-qPCR

Seq ID	Orientatio n	tm	GC%	Seq lengt h	Seq
Unigene0000836	FORWARD	59.31	50	248	CAGCCAGAAGAAGCTTGCTCA
Unigene0000836	REVERSE	60.38	50		ATCGCCTTCATAAGCAGCAC
Unigene0002417	FORWARD	60.04	45	409	GCTGGCATCAAGGAAATCAT
Unigene0002417	REVERSE	59.14	45		TTGGCTTCAACTGGATGTGT
Unigene0002446	FORWARD	60.05	40	249	TTGCCACTGGAAATGATGAA
Unigene0002446	REVERSE	59.57	45		AGCGCATGGTAATTGATGTG
Unigene0000378	FORWARD	59.69	45	258	GTGTTTGACGGATTGGGTTT
Unigene0000378	REVERSE	60.01	45		TTTTTGCTCACGCGTATCTG
Unigene0001253	FORWARD	60.57	50	288	AACTTGGACTGCGCTTTCAG
Unigene0001253	REVERSE	60.24	45		TCCAAGTTGCAGGAACATCA
Unigene0001290	FORWARD	59.63	50	244	CAGCGAGTTTTTCTCAACGTG
Unigene0001290	REVERSE	60.78	50		ACACAGCATCAAGCTCAGCA
Unigene0000908	FORWARD	58.33	50	319	GGCAGAAGCTGTAATGATGG
Unigene0000908	REVERSE	60.06	50		TGCAGGTTTTGTGCTACTGC
Unigene0000803	FORWARD	60.03	50	414	TTTCTGCTGTGCACTGGAAC
Unigene0000803	REVERSE	59.97	50		TTACCCCAAGAACCTGCAC
Unigene0002240	FORWARD	60.02	50	232	TGCTCCTGCTCCGTTTACTT
Unigene0002240	REVERSE	59.74	45		TTGGTTGTTGAACGAGTTGC
Unigene0000948	FORWARD	59.53	50	252	GAAATCACCAGTGGTCGTCA
Unigene0000948	REVERSE	60.02	55		CGGCTAAACTTCCAGTGAGC
Unigene0000969	FORWARD	58.41	45	332	CAGGTCACGGAATTTACAT
Unigene0000969	REVERSE	60.57	50		CATGTTGCGCTTAGCATCTG
Unigene0001039	FORWARD	60.08	45	399	TTGCATGATGACATCGACCT
Unigene0001039	REVERSE	59.84	42.86		CACCAGACAATGATCGGTTTT
Unigene0001606	FORWARD	60.43	55	239	GAGCTTCGAGAGCTGCAAAC
Unigene0001606	REVERSE	59.8	45.45		TGTACACCTGCTTCATCGAACT
Unigene0001123	FORWARD	59.95	50	230	GCGGCGTTCCATATACAGAT
Unigene0001123	REVERSE	60.18	50		TCACGAGTTTGAGCTGTTGC
Unigene0001576	FORWARD	59.94	50	254	GGGTGGTTCAGGTCTTTCAA
Unigene0001576	REVERSE	59.34	55		TAGCTCTGCCAAGTCTCGTG
Unigene0001131	FORWARD	60.1	45	256	GCAGATGAAGCTGATGCAAA
Unigene0001131	REVERSE	59.32	45		CGAAAACCAACAGATTCAG
Unigene0001341	FORWARD	59.93	55	310	TCCAACATCCGTCTCACC
Unigene0001341	REVERSE	60.61	50		TTCACCCCAACCGACAATAC
Unigene0000980	FORWARD	60.1	50	257	ACCATTGCTCCGATTAGTGC
Unigene0000980	REVERSE	59.57	40		ACCATTGCAAAAGCCTCATT
Unigene0000678	FORWARD	59.68	50	380	GACCTGACCATTGTGAGCAA

Unigene0000678	REVERSE	59.39	50		TCAGACTGACGTGGGAAAGA
Unigene0001394	FORWARD	60.14	50	244	CTGAGGCTGTCTGCAAATGA
Unigene0001394	REVERSE	60.69	55		GCCCGAACTAGTTGAACACG
Unigene0000307	FORWARD	59.84	45	239	GGCAAGTGAAATTTGGTGGT
Unigene0000307	REVERSE	59.81	45		TTCTGCCGAAAATGGAGACT
