

Supplemental Material

Complete biodegradation of 4-fluorocinnamic acid by a consortium of *Arthrobacter* sp. strain G1 and *Ralstonia* sp. strain H1

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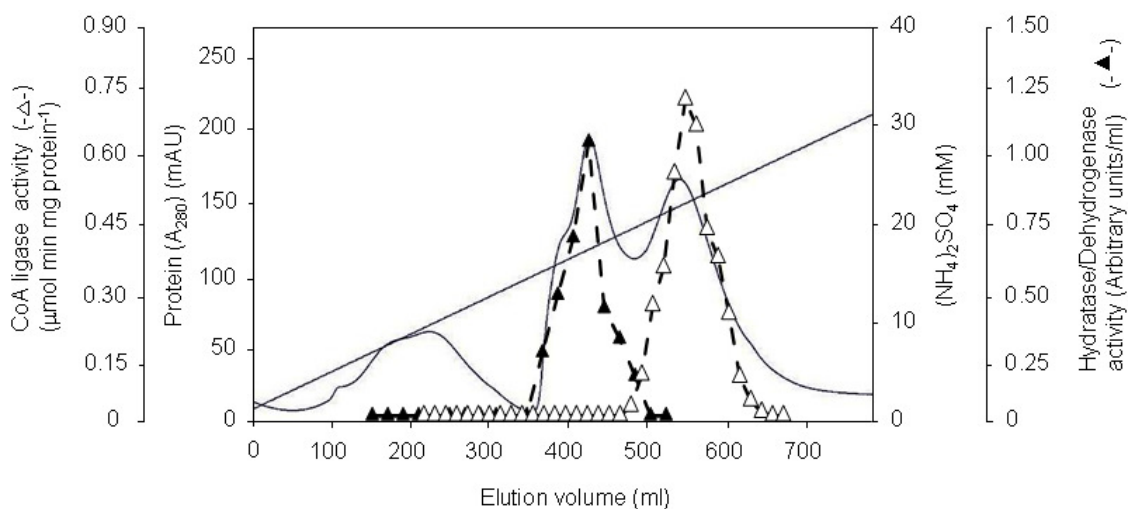
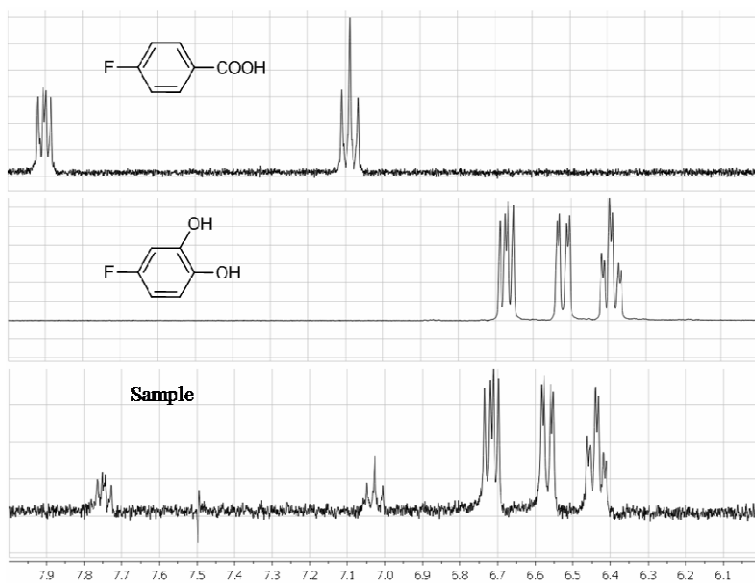


Fig. S1. Elution profile of protein (A_{280} , solid line), 4-fluorocinnamoyl CoA activity ($-\Delta-$) and combined hydratase and dehydrogenase activities ($-\blacktriangle-$) upon Q-Sepharose chromatography of cell-free extract of *Ralstonia* sp. strain H1 cells grown on 4-FCA.



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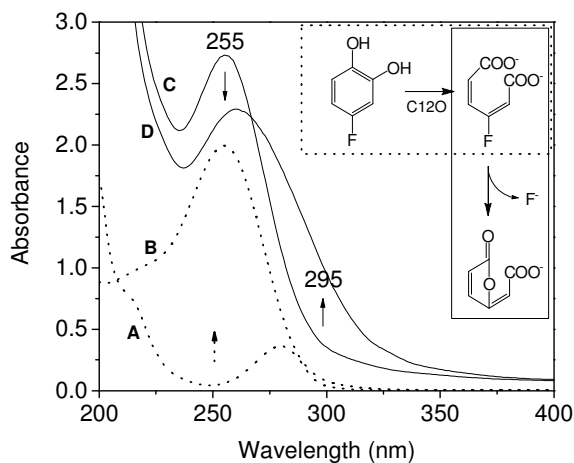
2 **Fig. S2.** ^1H NMR (chemical shifts) of 4-FBA transformation by *Ralstonia* sp. strain H1.

3 Top: starting compound; middle: 4-fluorocatechol standard; bottom, metabolite detected

4 after incubation of resting cells (pregrown in 4-fluorobenzoic acid) with

5 4-fluorocatechol.

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8 **Fig. S3.** Transformation of 4-fluorocatechol using partially purified catechol 1,2-

9 dioxygenase (C12O) of *Gordonia* sp. strain SH2 (dotted lines, [2]) and muconate

10 cycloisomerase-containing cell-free extract of *Ralstonia* sp. strain H1 (solid line). In the

11 first step, after addition of 1,2-dioxygenase activity to buffer with 4-fluorocatechol, the

1 increase in absorbance at 255 nm (curves A to B to C) indicates transformation of
2 4-fluorocatechol to 3-fluoromuconate (1). When cell-free extract of strain H1 was added
3 to this reaction mixture, absorbance decreased at 255 nm indicates cycloisomerisation to
4 the weakly absorbing carboxymuconolactone and conversion by a fluoromuconate
5 cycloisomerase activity, and increased at 295 nm (curves C to D), indicating
6 cycloisomerization of 3-fluoromuconate (1).

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8 **References**

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- 10 1. **Dorn, E., and H.-J. Knackmuss.** 1978. Chemical structure and biodegradability of
11 halogenated aromatic compounds. Substituent effects on 1,2-dioxygenation of
12 catechol. *Biochem. J.* **174**:85-94.
- 13 2. **Hasan, S.A.** 2010. Degradation of trifluoroacetophenone by the newly isolated
14 *Gordonia* sp. strain SH2. In: Biodegradation of fluorinated environmental pollutants
15 under aerobic conditions, PhD thesis, University of Groningen.