



# Enantioselective metabolism of chiral polychlorinated biphenyl 2,2',3,4,4',5',6-Heptachlorobiphenyl (CB183) by human and rat CYP2B subfamilies

Ito, Terushi ; Miwa, Chiharu ; Haga, Yuki ; Kubo, Makoto ; Itoh, Toshimasa ; Yamamoto, Keiko ; Mise, Shintaro ; Goto, Erika ; Tsuzuki, ...

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*Supporting Information*

**Enantioselective Metabolism of Chiral Polychlorinated Biphenyl  
2,2',3,4,4',5',6-Heptachlorobiphenyl (CB183) by Human and Rat  
CYP2B Subfamilies**

Terushi Ito<sup>1</sup>, Chiharu Miwa<sup>2</sup>, Yuki Haga<sup>3</sup>, Makoto Kubo<sup>4</sup>, Toshimasa Itoh<sup>4</sup>, Keiko Yamamoto<sup>4</sup>, Shintaro Mise<sup>1</sup>, Erika Goto<sup>1</sup>, Harunobu Tsuzuki<sup>1</sup>, Chisato Matsumura<sup>3</sup>, Takeshi Nakano<sup>5</sup>, Hideyuki Inui<sup>1,6,\*</sup>

<sup>1</sup>Graduate School of Agricultural Science, Kobe University, 1-1 Rokkodaicho, Nada-ku, Kobe, Hyogo 657-8501, Japan

<sup>2</sup>Faculty of Agriculture, Kobe University, 1-1 Rokkodaicho, Nada-ku, Kobe, Hyogo 657-8501, Japan

<sup>3</sup>Hyogo Prefectural Institute of Environmental Sciences, 3-1-18 Yukihirocho, Suma-ku, Kobe, Hyogo 654-0037, Japan

<sup>4</sup>Laboratory of Drug Design and Medicinal Chemistry, Showa Pharmaceutical University, 3-3165 Higashi-Tamagawagakuen, Machida, Tokyo 194-8543, Japan

<sup>5</sup>Research Center for Environmental Preservation, Osaka University, 2-4 Yamadaoka, Suita, Osaka 565-0871, Japan

<sup>6</sup>Biosignal Research Center, Kobe University, 1-1 Rokkodaicho, Nada-ku, Kobe, Hyogo 657-8501, Japan

\*Corresponding Author

Hideyuki Inui, Biosignal Research Center, Kobe University, 1-1 Rokkodaicho, Nada-ku,

Kobe, Hyogo, 657-8501, Japan

E-mail: [hinui@kobe-u.ac.jp](mailto:hinui@kobe-u.ac.jp), Telephone number: +81-78-803-5863

**Table S1** Monitored ions of derivatized hydroxylated PCBs observed in high-resolution gas chromatography/high-resolution mass spectrometry.

Homologue	Derivatized homologue	Selected fragment ( <i>m/z</i> )
OH-HpCB	CH <sub>3</sub> -HpCBs	423.8131 [M+2] <sup>+</sup>
		425.8102 [M+4] <sup>+</sup>
		380.7947 [M+2-COCH <sub>3</sub> ] <sup>+</sup>
		373.8202 [M+2-ClCH <sub>3</sub> ] <sup>+</sup>
OH-[ <sup>13</sup> C <sub>12</sub> ]-HpCB	CH <sub>3</sub> -[ <sup>13</sup> C <sub>12</sub> ]-HpCB	433.8563 [M] <sup>+</sup>

HpCB: heptachlorobiphenyl

**Table S2** Retention times of methylated products from 2,2',3,4,4',5',6-heptachlorobiphenyl (CB183) metabolites produced by human CYP2B6 and hydroxylated (OH)-CB183 standards.

MeOH-PCB <sup>*1</sup>		Retention time (min)		
		(+) <sup>*2</sup>	(-) <sup>*3</sup>	(±)
Authentic standard <sup>*4</sup>	S1			33.3
	S2			33.6
CB183 metabolite	M1	33.3	33.3	
	M2	33.7	33.7	

<sup>\*1</sup>Methylated hydroxylated polychlorinated biphenyl

<sup>\*2</sup>Retention times of methylated products of M1 and M2 that are produced by human CYP2B6 from (+)-CB183 as a substrate are represented.

<sup>\*3</sup>Retention times of methylated products of M1 and M2 that are produced by human CYP2B6 from (-)-CB183 as a substrate are represented.

<sup>\*4</sup>The authentic standards S1 and S2 are 3'-MeO-CB183 and 5-MeO-CB183, respectively.

**Table S3** Isotope ratios of methylated products from 2,2',3,4,4',5',6-heptachlorobiphenyl (CB183) metabolites produced by human CYP2B6 and hydroxylated (OH)-CB183 standards.

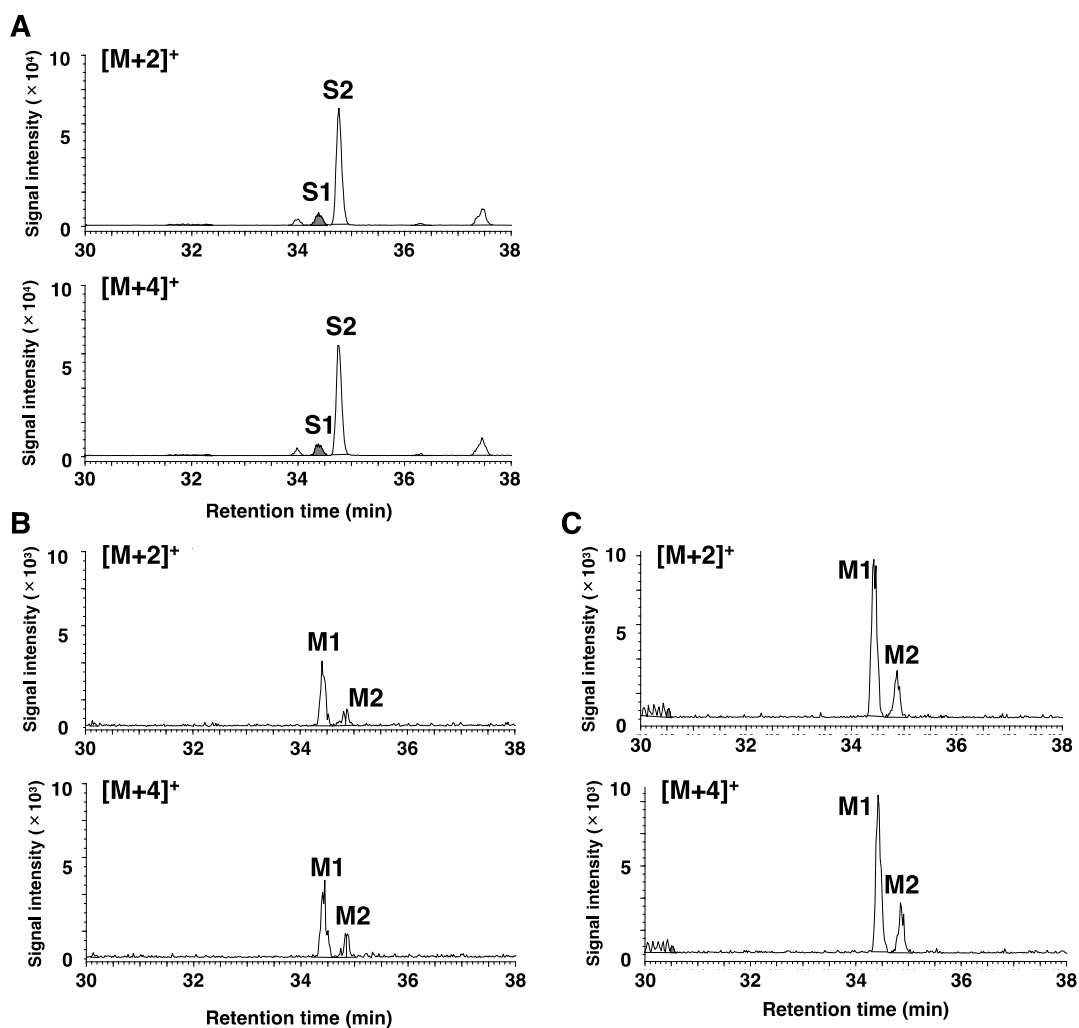
MeOH-PCB <sup>*1</sup>		Isotope ratio ([M+2] <sup>+</sup> : [M+4] <sup>+</sup> )			Theoretical ratio
		(+) <sup>*2</sup>	(-) <sup>*3</sup>	(±)	
Authentic standard <sup>*4</sup>	S1			1:1.02	1:097
	S2			1:1.12	
CB183 metabolite	M1	1:1.10	1:0.97		
	M2	1:1.04	1:1.09		

<sup>\*1</sup>Methylated hydroxylated polychlorinated biphenyl

<sup>\*2</sup>Isotope ratios of methylated products of M1 and M2 that are produced by human CYP2B6 from (+)-CB183 as a substrate are represented.

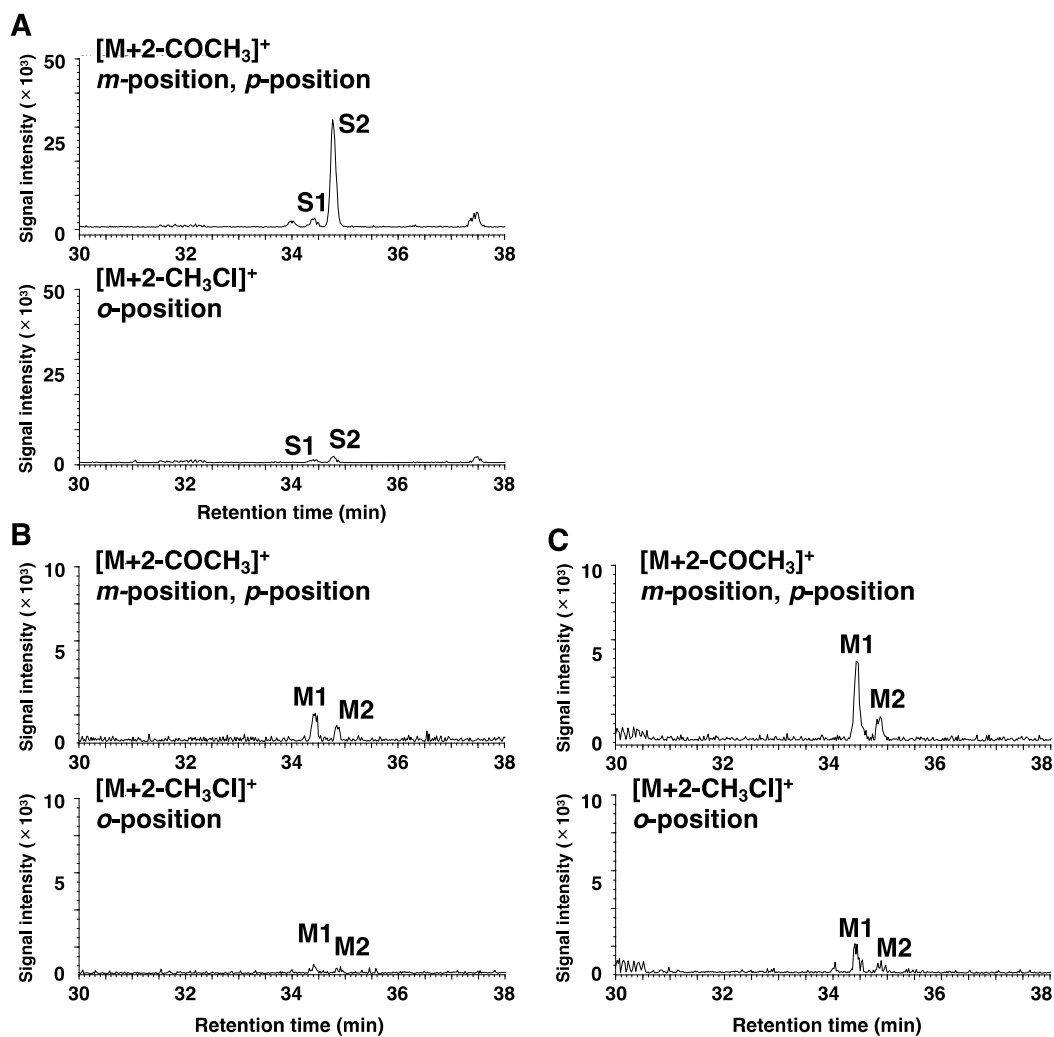
<sup>\*3</sup>Isotope ratios of methylated products of M1 and M2 that are produced by human CYP2B6 from (-)-CB183 as a substrate are represented.

<sup>\*4</sup>The authentic standards S1 and S2 are 3'-MeO-CB183 and 5-MeO-CB183, respectively.



**Figure S1** Isotope ratios ( $[M+2]^+$  and  $[M+4]^+$ ) of hydroxylated heptachloro metabolites of CB183 by human CYP2B6 analyzed by high-resolution gas chromatography/ high-resolution mass spectrometry.

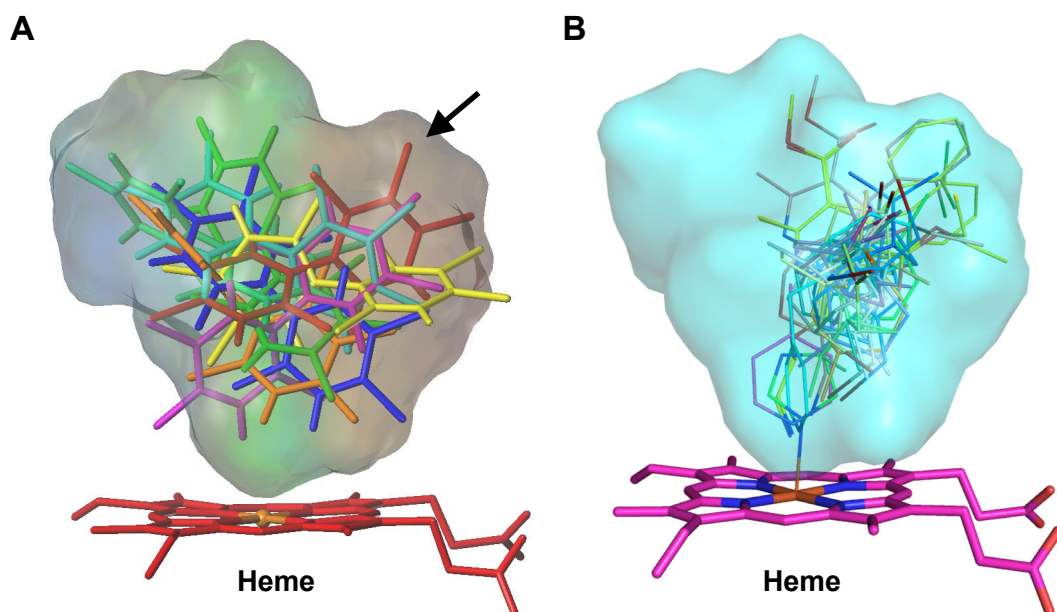
(A): Authentic standards S1 (3'-MeO-CB183) and S2 (5-MeO-CB183). (B) and (C): Hydroxylated heptachloro metabolites of (+)-CB183 and (-)-CB183, respectively.



**Figure S2** Pattern of fragment ions ( $[M+2-COCH_3]^+$  and  $[M+2-CH_3Cl]^+$ ) of hydroxylated heptachloro metabolites of CB183 by human CYP2B6 analyzed by high-resolution gas chromatography/ high-resolution mass spectrometry.

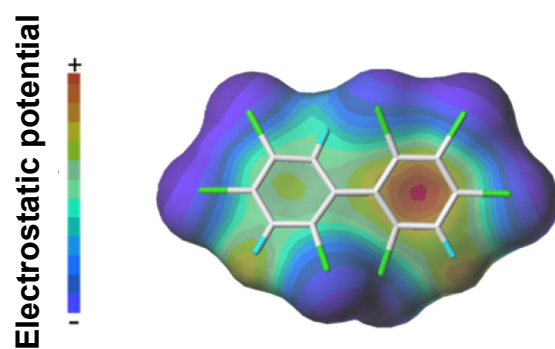
(A) Authentic standards S1 (3'-MeO-CB183) and S2 (5-MeO-CB183). (B) and (C): Hydroxylated heptachloro metabolites of (+)-CB183 and (-)-CB183, respectively.





**Figure S3** Docking models of CB183 with human CYP2B6.

(A): Eight conformations of CB183 were docked into the substrate-binding cavity of human CYP2B6 (PDB: 3IBD). The arrow indicates the plausible conformation of CB183 in the cavity. (B): Thirteen crystal structures of human CYP2B6 (mentioned under Materials and Methods) superimposed to show sixteen ligands in their substrate-binding cavities.



**Figure S4** Electrostatic potential map of CB183. Blue portion indicates region of high electron density.