Supporting Information

Identification of the full 46 cytochrome P450 (*CYP*) complement and modulation of *CYP* expression in response to water-accommodated fractions (WAFs) of crude oil in the cyclopoid copepod *Paracyclopina nana*

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Table S1. GenBank accession numbers of genes in this study

GenBank Accession number	ORF size (a.a.)	Clan	Matched gene	Matched species	E-value
CYP 18E1 (KP899564)	543	2	CYP18A1 (XP393885)	*Apis mellifera*	2e-154
CYP306A1 (KP899565)	489	2	CYP306A1 (XP006557887)	*Apis mellifera*	3e-112
CYP 307F1 (KP899566)	532	2	CYP307E1 (AIL94134)	*Tigriopus japonicus*	8e-123
CYP 3029B1 KP899567	492	2	CYP2J2 (XP587546)	*Bos taurus*	3e-79
CYP 3033B1 (KP899568)	558	2	CYP2K1 (KFV81929)	*Struthio camelus australis*	1e-67
CYP 3034B1 KP899569	509	2	CYP2J2 (KFO34696)	*Fukomys damarensis*	6e-73
CYP 3036B1 (KP899570)	504	2	CYP2J6 (XP004068236)	*Oryzias latipes*	4e-77
CYP 3036B2 (KP899571)	508	2	CYP2J6 (AIE17355)	*Cynoglossus semilaevis*	3e-75
CYP 3037B1 (KP899572)	483	2	CYP2J6 (KDR19530)	*Zootermopsis nevadensis*	7e-96
CYP 3038C1 (KP899573)	509	2	CYP2J2 (KDR22559)	*Zootermopsis nevadensis*	3e-56
CYP 3041B1 (KP899574)	480	2	CYP2J6 (KDR19530)	*Zootermopsis nevadensis*	4e-89
CYP 3075A1 (KP899575)	519	*2*	CYP2K4 (XP005420420)	*Geospiza fortis*	2e-79
CYP 3075A2 (KP899576)	521	2	CYP2K1 (KFV81930)	*Struthio camelus australis*	4e-78
CYP 3075A3 (KP899577)	519	2	CYP2C9 (XP009814712)	*Gavia stellata*	3e-86
CYP 3075A4 (KP899578)	518	2	CYP2J6 (XP008293655)	*Stegastes partitus*	2e-86
CYP 3075A5 (KP899579)	508	2	CYP2J2 (XP004896334)	*Heterocephalus glaber*	8e-75
CYP 3075B1 (KP899580)	353	2	CYP2J6 (XP005795706)	*[Xiphophorus maculatus*	1e-69
CYP 3075B2 (KP899581)	509	2	CYP2J2 (XP006879803)	*Elephantulus edwardii*	2e-94
CYP 3075C1 (KP899582)	522	2	CYP2J2 (XP005956793)	*Pantholops hodgsonii*	2e-84
CYP 3076A1 (KP899583)	481	2	CYP2J2 (XP008137597)	*Eptesicus fuscus*	2e-65
CYP 3076A2 (KP899584)	495	2	CYP2J2 (KDR22559)	*Zootermopsis nevadensis*	2e-65
CYP 3082A1 (KP899585)	348	2	CYP2K1 (XP006137093)	*Pelodiscus sinensis*	3e43
CYP 3083A1 (KP899586)	285	2	CYP2J6 (NP034138)	*Mus musculus*	5e-45
CYP 3129A1 (KP899587)	507	2	CYP2J6 (XP004068238)	*Oryzias latipes*	9e-79
CYP 3130A1 (KP899588)	504	2	CYP2J6 (XP005948149)	*Haplochromis burtoni*	4e-79
CYP 3026D1 (KP899589)	528	3	CYP6A13 (XP966437)	*Tribolium castaneum*	3e-95
CYP 3026D2 (KP899590)	529	3	CYP6A13 (KDR19800)	*Zootermopsis nevadensis*	1e-88
CYP 3026D3 (KP899591)	528	3	CYP6A2 (XP969875)	*Tribolium castaneum*	2e-89
CYP 3027D1 (KP899592)	481	3	CYP3A24 (NP001123376)	*Ovis aries*	3e-70
CYP 3027E1 (KP899593)	489	3	CYP3A24 (ACO15001)	*Caligus clemensi*	6e-112
CYP 3027F1 (KP899594)	485	3	CYP3A24 (ACO10681)	*Caligus rogercresseyi*	1e-84
CYP 3027F2 (KP899595)	486	3	CYP3A24 (ACO15001)	*Caligus clemensi*	4e-102
CYP 3079A1 (KP899596)	507	3	CYP3A78 (ADR00355)	*Phascolarctos cinereus*	4e-70
CYP 3081A1 (KP899597)	528	3	CYP9B2 (XP001855257)	*Culex quinquefasciatus*	3e-60
CYP 3081B1 (KP899598)	510	3	CYP9E2 (XP008197525)	*Tribolium castaneum*	3e-69
CYP 3081C1 (KP899599)	514	3	CYP9E2 (001603857)	*Nasonia vitripennis*	3e-70
CYP 44D2 (KP899600)	519	MT	CYP44 (KDR13959)	*Zootermopsis nevadensis*	1e-153
CYP 302A1 (KP899601)	456	MT	CYP302A1 (AGT57842)	*Leptinotarsa decemlineata*	3e-116

Table S1. Continued.

GenBank Accession number	ORF size (a.a.)	Clan	Matched gene	Matched species	E-value
CYP 314A1 (KP899602)	524	MT	CYP314A1 (AGI92301)	*Laodelphax striatella*	1e-103
CYP 315A1 (KP899603)	428	MT	CYP315A1 (KDR16797)	*Zootermopsis nevadensis*	1e-70
CYP 3020B1 (KP899604)	500	MT	CYP301A1 (XP001948959)	*Acyrthosiphon pisum*	1e-99
CYP 3077A1 (KP899605)	515	MT	CYP49A1 (XP001946744)	*Acyrthosiphon pisum*	2e-75
CYP 3078A1 (KP899606)	509	MT	CYP49A1 (XP006562546)	*Apis mellifera*	1e-65
CYP 3078B1 (KP899607)	501	MT	CYP301A1 (KDR20887)	*Zootermopsis nevadensis*	1e-64
CYP20A1 (KP899608)	473	20	CYP20A1 (XP003223588)	*Anolis carolinensis*	1e-65
CYP 3080A1 (KP899609)	432	26	CYP26A1 (XP007890111)	*Callorhinchus milii*	1e-66

Fig. S1. PAH composition of the water-accommodated fraction (WAF), (A) concentrations of each component in WAF and (B) the total concentrations of 16 PAHs and alkylated PAHs in WAF. Abbreviations:` N0, Naphthalene; N1, C1-Naphthalene; N2, C2-Naphthalene; N3, C3-Naphthalene; N4, C4-Naphthalene; AC, Acenaphthylene; AE, Acenaphthene; F, Fluorene; F1, C1-Fluorene; F2, C2-Fluorene; F3, C3-Fluorene; D0, Dibenzothiophene; D1, C1-Dibenzothiophene; D2, C2-Dibenzothiophene; D3, C3-Dibenzothiophene; P0, Phenanthrene; P1, C1-Phenanthrene; P2, C2-Phenanthrene; P3, C3-Phenanthrene; P4, C4-Phenanthrene; AN, Anthracene; FL, Fluoranthene; PY, Pyrene; AA, Benz[a]anthracene; C0, Chrysene; C1, C1-Chrysene; C2, C2-Chrysene; C3, C3-Chrysene; BB, Benzo[b]fluoranthene; BK, Benzo[k]fluoranthene; BE, Benzo[e]pyrene; BA, Benzo[a]pyrene; PE, Perylene; IC, Indeno[1,2,3-cd]pyrene; DB, Dibenzo[a,h]anthracene; BZ, Benzo[ghi]perylene

Fig. S2. Phylogenetic tree of the different CYP2 clan members.

Fig. S3. Phylogenetic tree of the different CYP3 clan members.

Fig. S4. Phylogenetic tree of the different mitochondrial clan, clan 20, and clan 26 members.

Fig. S5. (A) Phylogenetic tree of the *PN-CYP* genes with three WAF-sensitive *CYP* genes of *T. japonicus* and (B) the modulations of three *CYP* genes in response to WAF exposure. The values of modulated mRNA expression by WAF exposure are from Han et al. (2014).

Fig. S6. Expression patterns of the four *PN-CYP* genes, (A) *CYP3027D1*, (B) *CYP3027E1*, (C) *CYP3027F1*, and (D) *CYP3027F2* in response to different concentrations (control, 20, 40, 60, and 80%) of WAF.

Fig. S7. Expression patterns of the four *PN-CYP* genes; *CYP3027D1*, *CYP3027E1*, *CYP3027F1*, and CYP3027F2) in response to a time course of exposure to alkylated

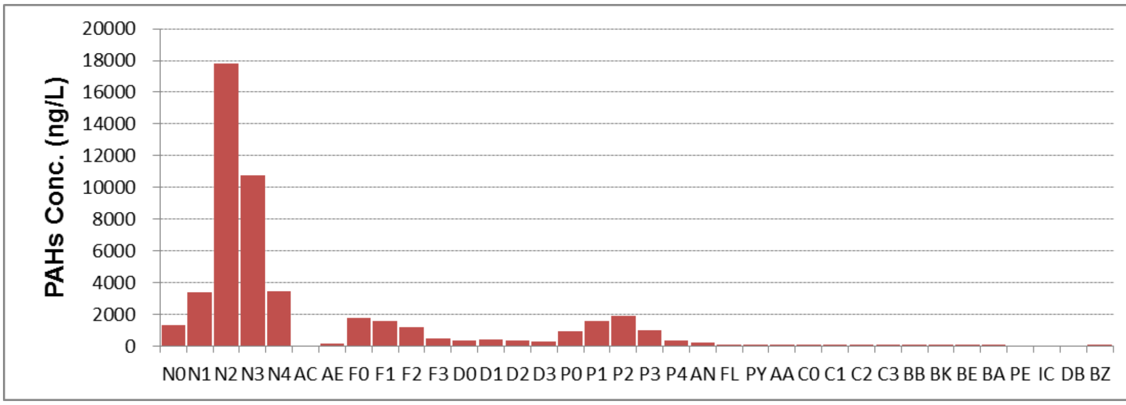
PAHs, (A) 2-ethyl-phenanthrene (0.1 mg/L) and (B) 1,8-dimethyl-9H-fluorene (0.2mg/L).

Fig. S8. Complete cDNA sequences of (A) *AhR* and (B) *ARNT*.

Fig. S9. Expression patterns of the (A) *AhR* and (B) *ARNT* genes from *T. japonicus* in response to WAF exposure.

Fig. S1

A)


PAHs Conc. (ng/L)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
N0 N1 N2 N3 N4 AC AE F0 F1 F2 F3 D0 D1 D2 D3 P0 P1 P2 P3 P4 AN FL PY AA C0 C1 C2 C3 BB BK BE BA PE IC DB BZ

B)

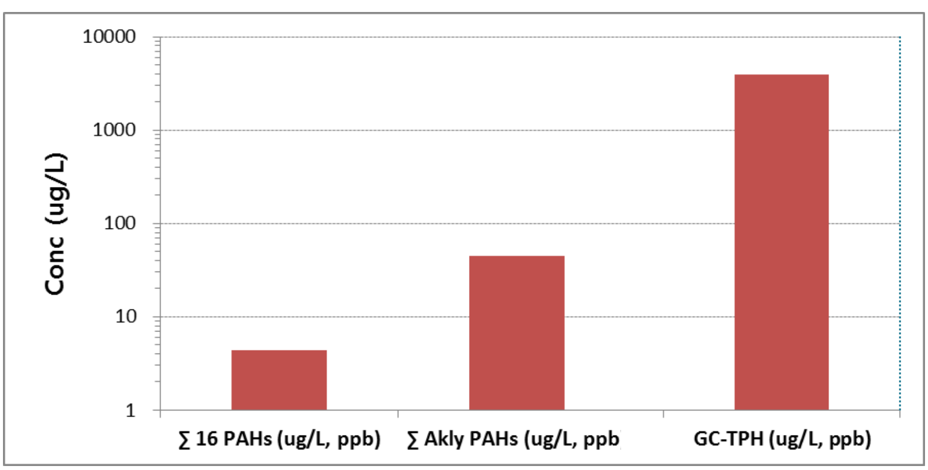
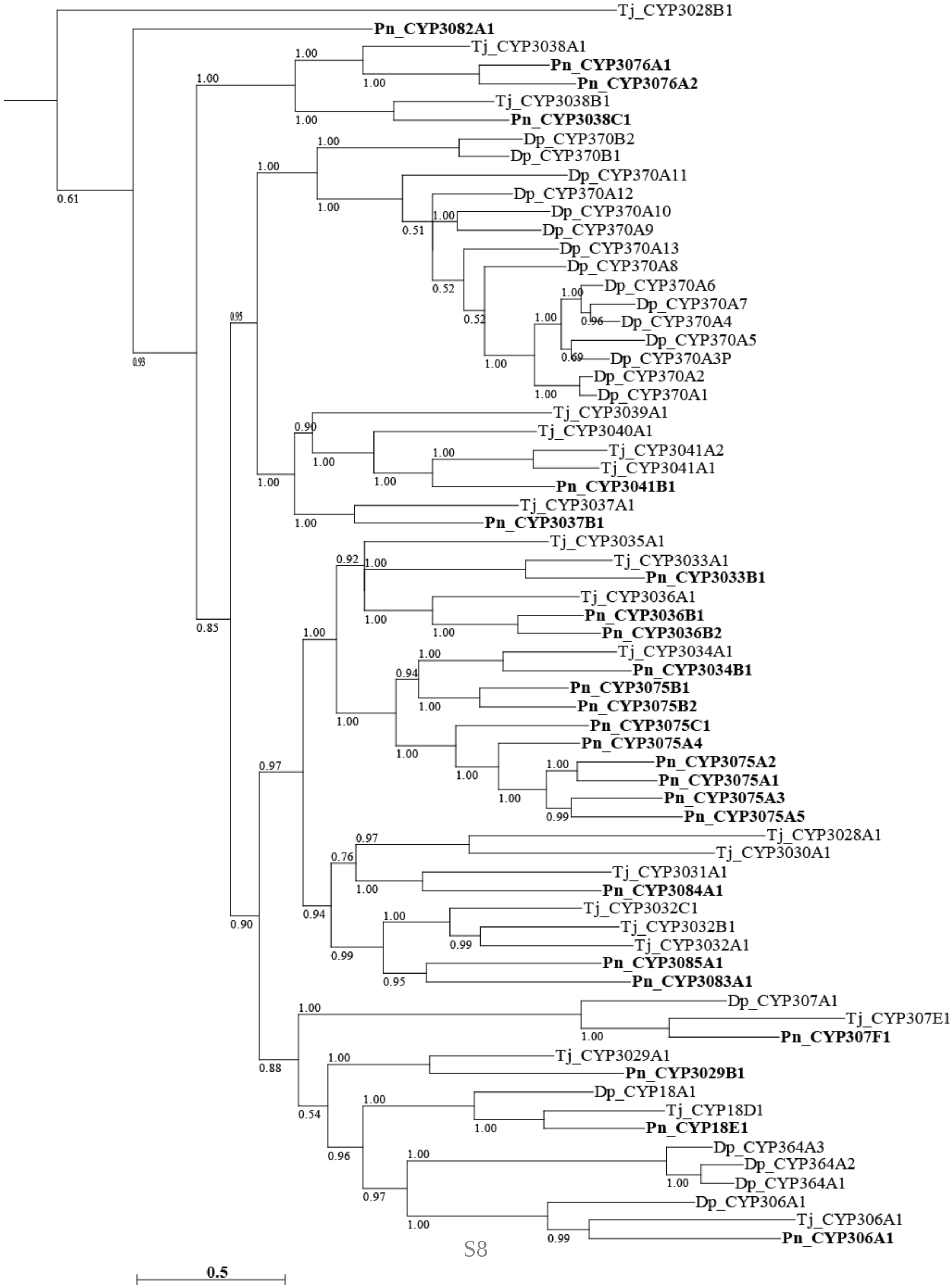

Conc (ug/L)
10000
1000
100
10
1
∑ 16 PAHs (ug/L, ppb)
∑ Akly PAHs (ug/L, ppb
GC-TPH (ug/L, ppb)

Fig. S2

Clan 2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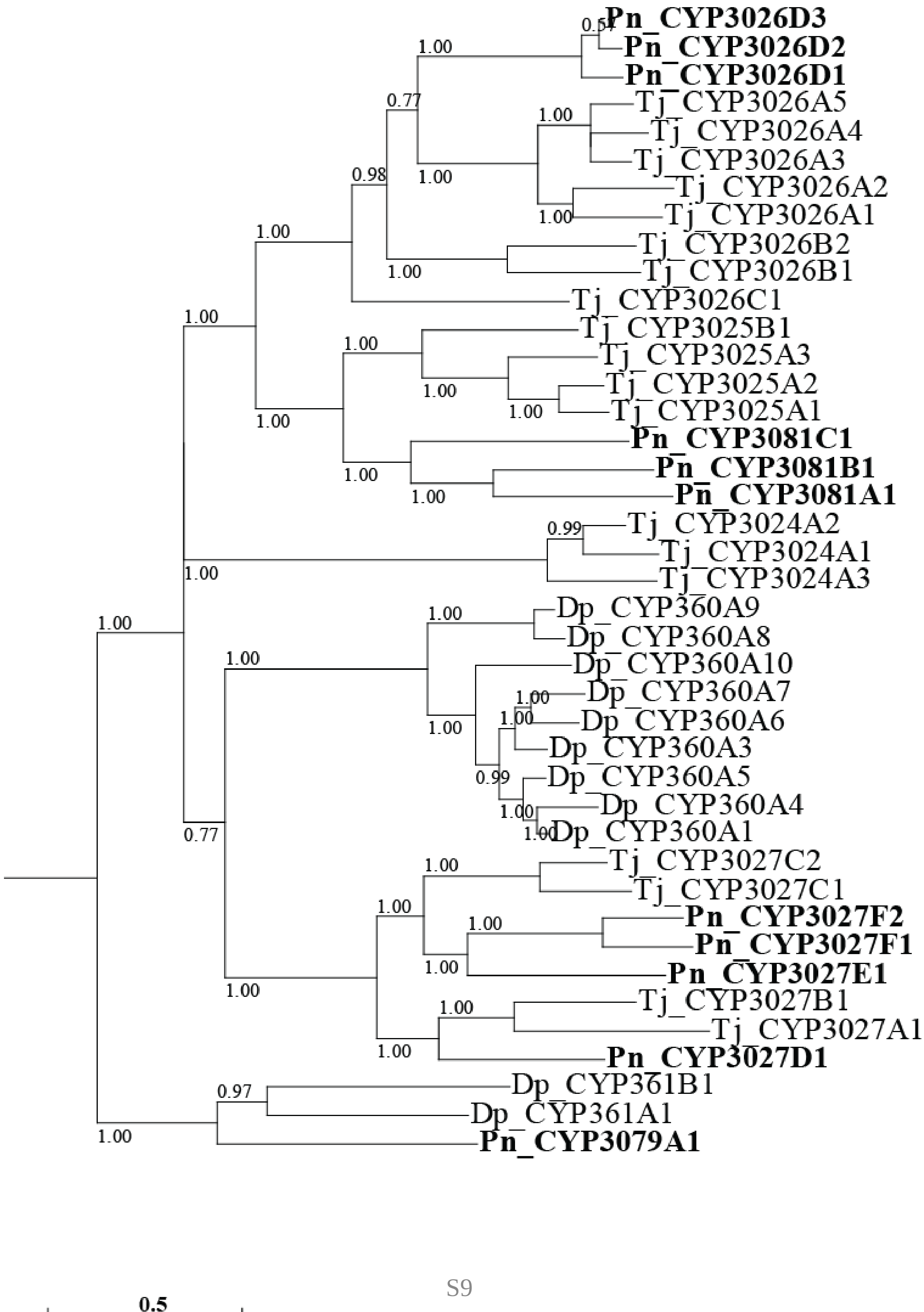
Pn_CYP3082A1
Tj_CYP3038A1
Pn_CYP3076A1
Pn_CYP3076A2
Tj_CYP3038B1
Pn_CYP3038C1
Dp_CYP370B2
Dp_CYP370B1
Dp_CYP370A11
Dp_CYP370A12
Dp_CYP370A10
Dp_CYP370A9
Dp_CYP370A13
Dp_CYP370A8
Dp_CYP370A6
Dp_CYP370A7
Dp_CYP370A4
Dp_CYP370A5
Dp_CYP370A3P
Dp_CYP370A2
Dp_CYP370A1
Tj_CYP3039A1
Tj_CYP3040A1
Tj_CYP3041A2
Tj_CYP3041A1
Pn_CYP3041B1
Tj_CYP3037A1
Pn_CYP3037B1
Tj_CYP3035A1
Tj_CYP3033A1
Pn_CYP3033B1
Tj_CYP3036A1
Pn_CYP3036B1
Pn_CYP3036B2
Tj_CYP3034A1
Pn_CYP3034B1
Pn_CYP3075B1
Pn_CYP3075B2
Pn_CYP3075C1
Pn_CYP3075A4
Pn_CYP3075A2
Pn_CYP3075A1
Pn_CYP3075A3
Pn_CYP3075A5
Tj_CYP3028A1
Tj_CYP3030A1
Tj_CYP3031A1
Pn_CYP3084A1
Tj_CYP3032C1
Tj_CYP3032B1
Tj_CYP3032A1
Pn_CYP3085A1
Pn_CYP3083A1
Dp_CYP307A1
Tj_CYP307E1
Pn_CYP307F1
Tj_CYP3029A1
Pn_CYP3029B1
Dp_CYP18A1
Tj_CYP18D1
Pn_CYP18E1
Dp_CYP364A3
Dp_CYP364A2
Dp_CYP364A1
Dp_CYP306A1
Tj_CYP306A1
Pn_CYP306A1
0.5

Clan 3

Fig. S3


0.57
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1.00
Pn_CYP3026D2
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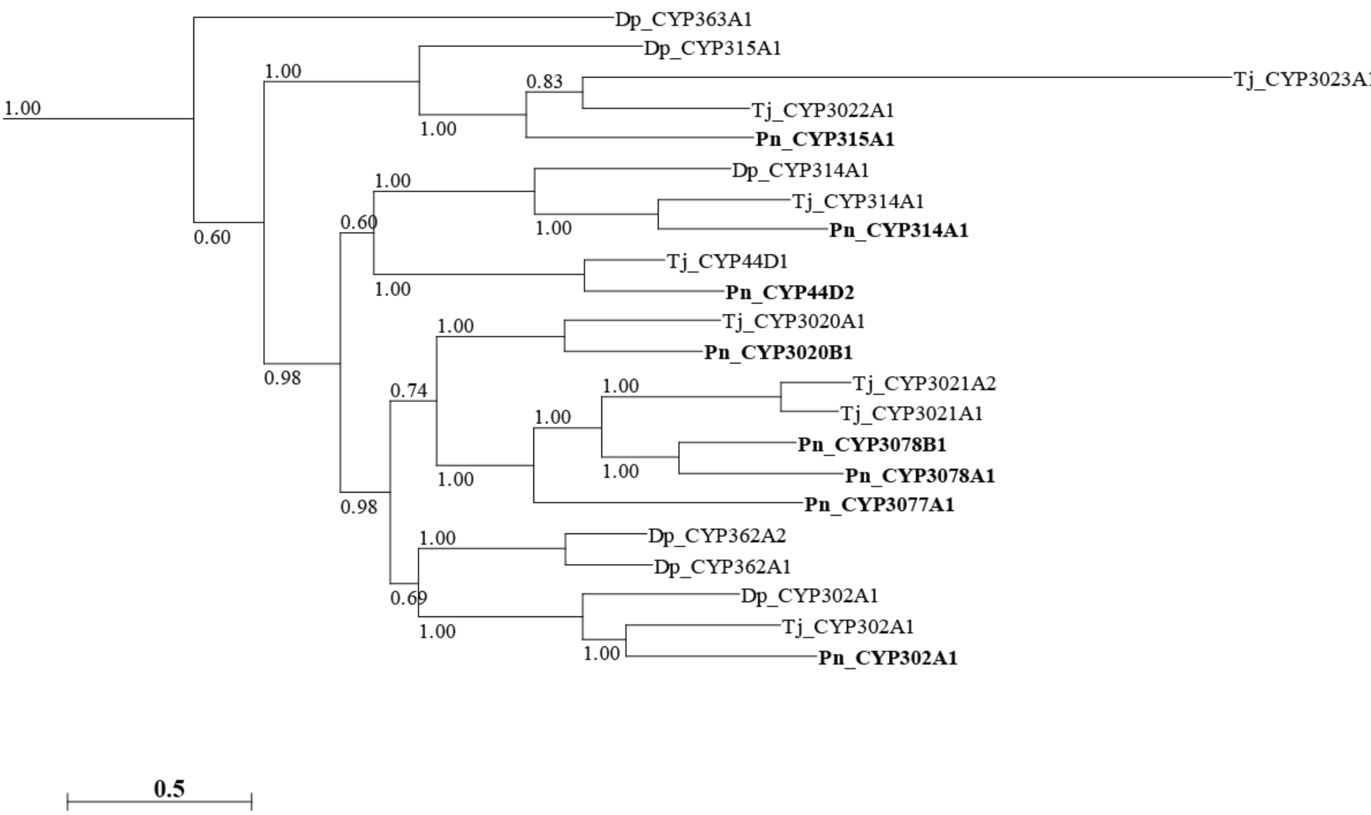
1.00
Tj_CYP3026A4
Tj_CYP3026A3
0.98
1.00
Tj_CYP3026A2
1.00
Tj_CYP3026A1
1.00
Tj_CYP3026B2
1.00
Tj_CYP3026B1
Tj_CYP3026C1
1.00
Tj_CYP3025B1
1.00
Tj_CYP3025A3
1.00
Tj_CYP3025A2
1.00
Tj_CYP3025A1
1.00
Pn_CYP3081C1
Pn_CYP3081B1
1.00
Pn_CYP3081A1
1.00
0.99
Tj_CYP3024A2
Tj_CYP3024A1
1.00
Tj_CYP3024A3
Dp_CYP360A9
1.00
Dp_CYP360A8
1.00
1.00
Dp_CYP360A10
1.00
Dp_CYP360A7
1.00
Dp_CYP360A6
1.00
Dp_CYP360A3
0.99
Dp_CYP360A5
1.00
Dp_CYP360A4
0.77
1.00
Dp_CYP360A1
Tj_CYP3027C2
1.00
Tj_CYP3027C1
1.00
Pn_CYP3027F2
1.00
Pn_CYP3027F1
1.00
Pn_CYP3027E1
1.00
Tj_CYP3027B1
1.00
Tj_CYP3027A1
1.00
Pn_CYP3027D1
0.97
Dp_CYP361B1
Dp_CYP361A1
1.00
Pn_CYP3079A1
0.5

Fig. S4

Clan MT



Clan 20, 26

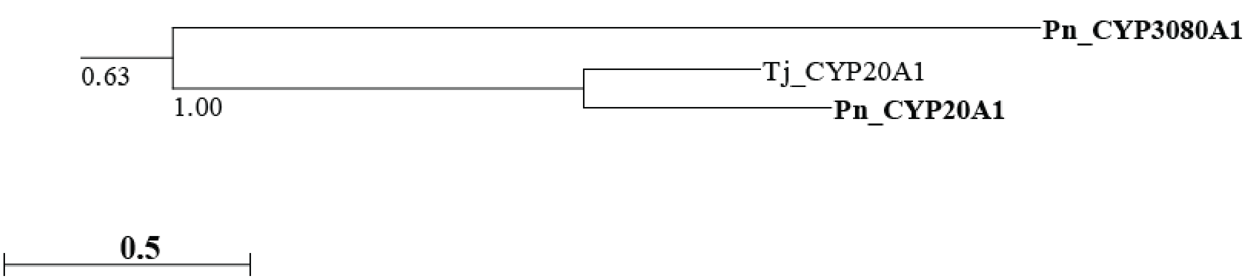
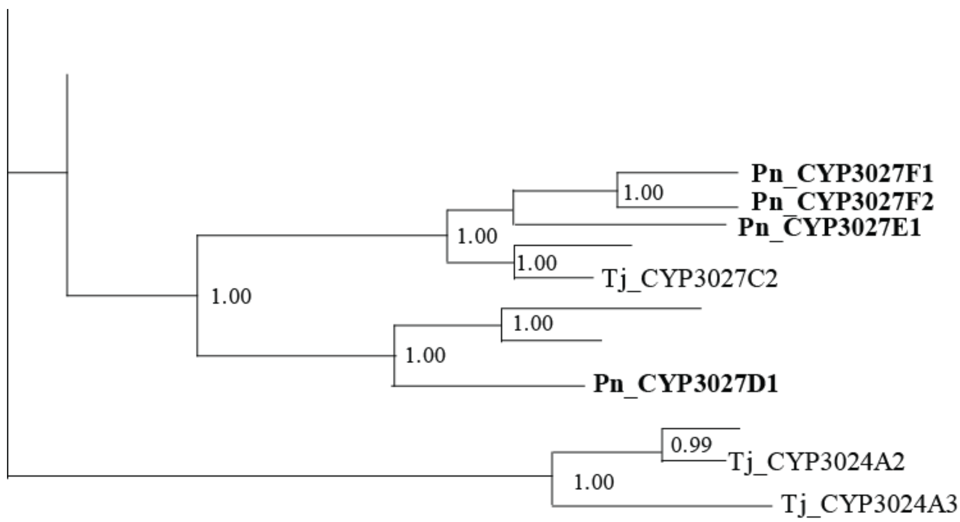


Fig. S5

A)



B) *Tigriopus japonicus*

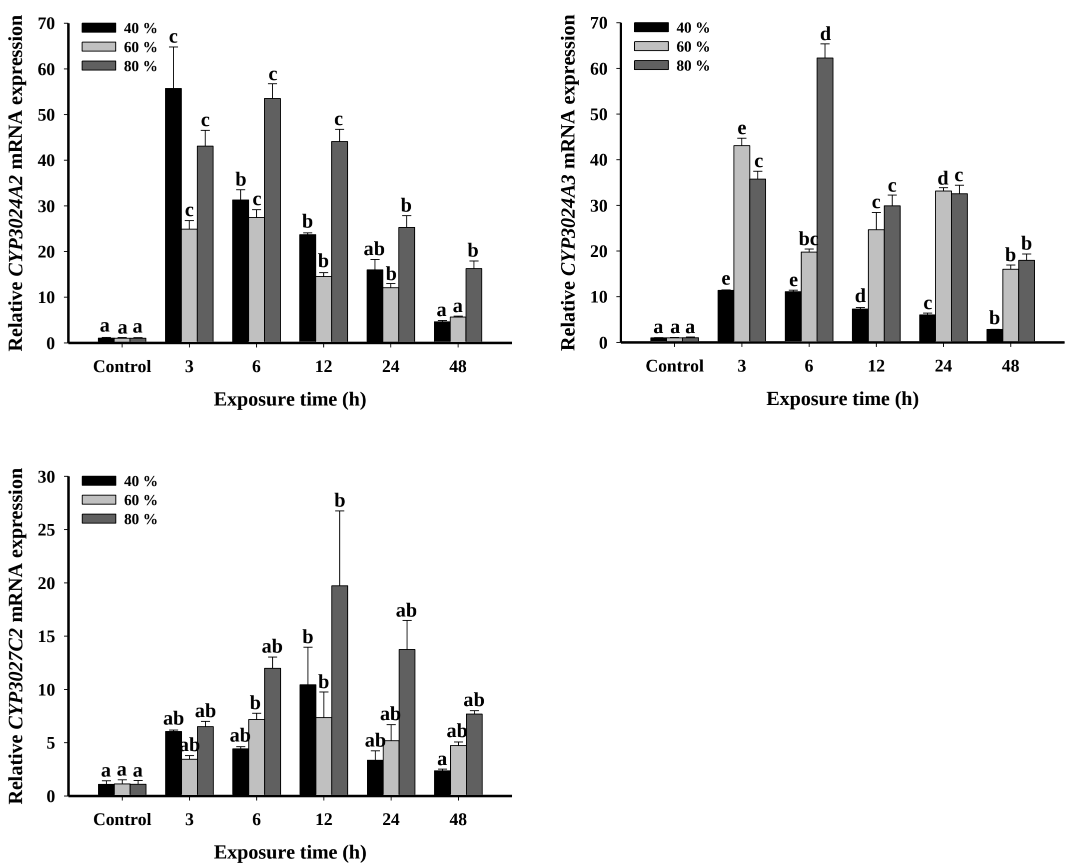


Fig. S6

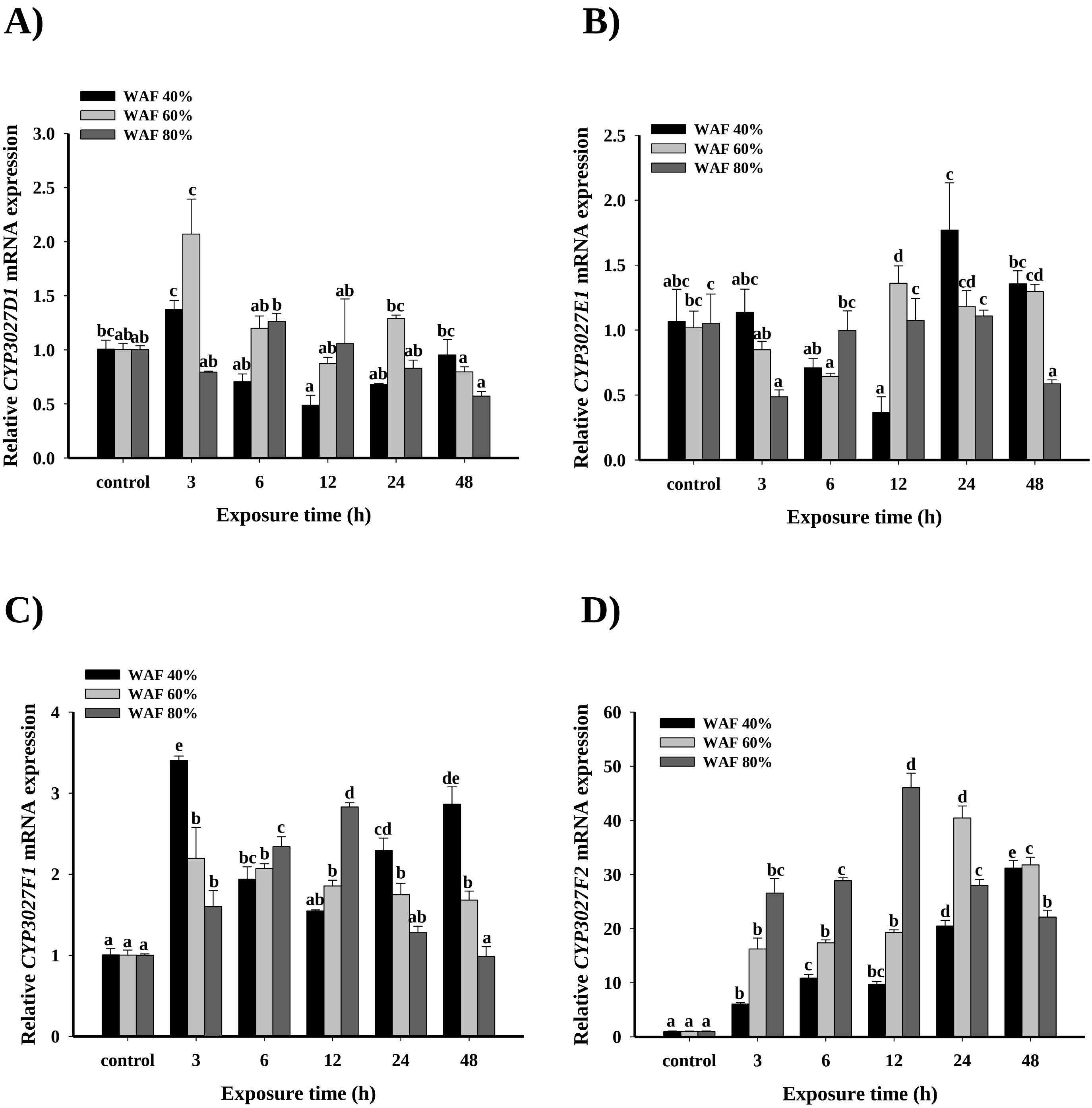
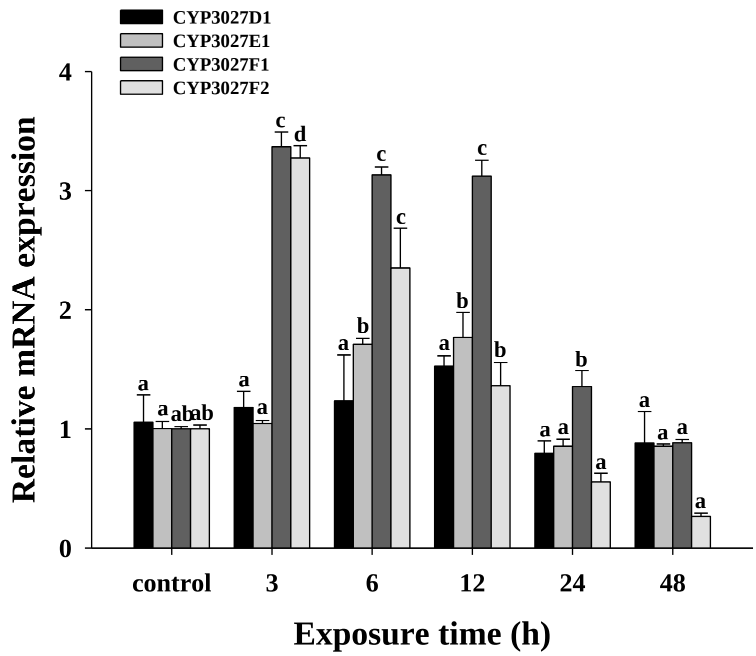

A)
WAF 40%
WAF 60%
WAF 80%
Relative CYP3027D1 mRNA expression
Exposure time (h)
control
3
6
12
24
48
B)
Relative CYP3027E1 mRNA expression
C)
Relative CYP3027F1 mRNA expression
D)
Relative CYP3027F2 mRNA expression

Fig. S7

A) 2-ETHYL-Phenanthrene 0.1mg/L (NOEC)



B) 1,8-dimethyl-9H-fluorene 0.2mg/L (NOEC)

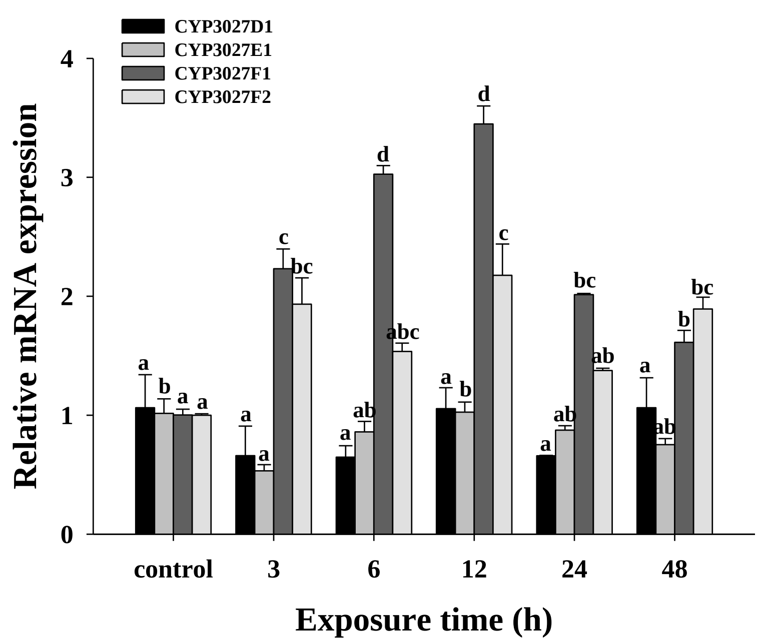


Fig. S8

A) Aryl hydrocarbon receptor (AhR)

```
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      M  N  S  S  P  N  P  L  S  T  V  Y  A  T  K  R  R  R  R  S
  61  AATAAAAGCCTGCGGCCGACCCCAACAAAGGACAGCTCGAGCCAGGCCAAAAGCAACCCT
      N  K  S  L  R  P  T  P  T  K  D  S  S  S  Q  A  K  S  N  P
 121  TCCAAACGTCACAGGGAACGACTCAATGGCGAACTCGACCACTTGGCCTCACTTCTGCCC
      S  K  R  H  R  E  R  L  N  G  E  L  D  H  L  A  S  L  L  P
 181  TTCGAGCAGAACATTCTGTCCAAGCTGGACAGGCTGTCCATCCTCAGATTGGCTGTGGCC
      F  E  Q  N  I  L  S  K  L  D  R  L  S  I  L  R  L  A  V  A
 241  TTCCTCAGGACCAAGACCTACTTTCAAGTGGCCATGCAACGCGAGCGGGACGAGCTGGTG
      F  L  R  T  K  T  Y  F  Q  V  A  M  Q  R  E  R  D  E  L  V
 301  GACGGGCCTTACCGCAGAGATTTCCTCACCTACGACAACCATCTTCTGGACGGAGACATC
      D  G  P  Y  R  R  D  F  L  T  Y  D  N  H  L  L  D  G  D  I
 361  TTCCTCCAGGCTCTCAACGGGTTTTTGATGATCCTCGACTGCAACGGGGAGCTTTTCTTT
      F  L  Q  A  L  N  G  F  L  M  I  L  D  C  N  G  E  L  F  F
 421  GCCACGCACACAATAGAAACGTATCTAGGGTTCCATCAGTCCGATGTAATTCACCAGTCT
      A  T  H  T  I  E  T  Y  L  G  F  H  Q  S  D  V  I  H  Q  S
 481  GTGTATGAGCTAGTCCATTCAGAGGATCGCGAGGAGCTGCAACGTCAGCTCGGCTGGGAC
      V  Y  E  L  V  H  S  E  D  R  E  E  L  Q  R  Q  L  G  W  D
 541  TCGTTCCTCGGCCAAGAGGATTCGGGCATCGGCTTACAGGAGCTGCTCGCCTCGGACCAT
      S  F  L  G  Q  E  D  S  G  I  G  L  Q  E  L  L  A  S  D  H
 601  CATCACCTGCTCGACAGATCCTTCACCGTTCGATTCAGATGCCTGCTCGACAACACCTCG
      H  H  L  L  D  R  S  F  T  V  R  F  R  C  L  L  D  N  T  S
 661  GGATTCCTCAGGCTGGATATTCGCGGGAAGATCAAGGTGCTCCACGGGCAAAACAAGAAG
      G  F  L  R  L  D  I  R  G  K  I  K  V  L  H  G  Q  N  K  K
 721  AGTGAGGAGGCGCCCCTGGCCCTGTTCTGCCTGTGCACGCCCTTCGGCCCGCCCTCGCTG
      S  E  E  A  P  L  A  L  F  C  L  C  T  P  F  G  P  P  S  L
 781  CTCGAGATCCCGCACAAGGAGGTGATGTTCAAGTCGAAGCACAAGCTCGACTTCGGCTTC
      L  E  I  P  H  K  E  V  M  F  K  S  K  H  K  L  D  F  G  F
 841  GTCTCCATGGACCAGCGGGGCAAGGAGATGCTCCAGTACGACGAGGAAGAGATGTCAGAC
      V  S  M  D  Q  R  G  K  E  M  L  Q  Y  D  E  E  E  M  S  D
 901  ATTGGAGGCTACGACCTCGTCCACCACGACGACCTCGCCTACGTCGCCAGCGCTCACCAA
      I  G  G  Y  D  L  V  H  H  D  D  L  A  Y  V  A  S  A  H  Q
 961  GAACTGCTGAAAACGGGTGCGAGCGGGATGATCGCCTACAGACTCCAAGCCAAAGATCAA
      E  L  L  K  T  G  A  S  G  M  I  A  Y  R  L  Q  A  K  D  Q
1021  AAGTGGCAATGGCTCCAGACCTCATCGAGATTAGTGTACAAAAACTCCAAGCCGGACTTT
      K  W  Q  W  L  Q  T  S  S  R  L  V  Y  K  N  S  K  P  D  F
1081  ATCATCTCCACGCACCGGCCACTGATGGAGGAGGAGGGCCGAGATTTGCTGGGCAAACGA
      I  I  S  T  H  R  P  L  M  E  E  E  G  R  D  L  L  G  K  R
1141  ACGATGGACTTTAAAGTGACCTACTTGGACGCTGGCTTAACCAGTGCCTACTTCAACGAC
      T  M  D  F  K  V  T  Y  L  D  A  G  L  T  S  A  Y  F  N  D
1201  GGCGACCCGCCCAACTCGAACGGGTCGGCCACGAGCGGCAGCGTCAACGCCAACTCGGGT
      G  D  P  P  N  S  N  G  S  A  T  S  G  S  V  N  A  N  S  G
1261  AGCGGCGGCTCGAGCAAAGTGCCAAAACGCTACAAAGCGCATCTCCGAGATTTCCTCAGC
      S  G  G  S  S  K  V  P  K  R  Y  K  A  H  L  R  D  F  L  S
1321  TCGTGCCGAACGAAACGCTCCAAAAACCACAACGCTTCCGTTTCCGCTTCCGACATTTAC
      S  C  R  T  K  R  S  K  N  H  N  A  S  V  S  A  S  D  I  Y
1381  GTGGACCCGGCGGCGGCCGCGGCCTCCGCCTTGCCCTACGCCACAGTCTACTCCGCCCCG
      V  D  P  A  A  A  A  A  S  A  L  P  Y  A  T  V  Y  S  A  P
1441  CCCTCGGCCGCGCCCGCATACGCCACCGACAGCCCTCTGTACATGCAGCAAAACATCACC
      P  S  A  A  P  A  Y  A  T  D  S  P  L  Y  M  Q  Q  N  I  T
1501  TCGTCTCCATATCAGACCATCTACCCCGTGGACAATAGGTATTTCTCCTCGGAGTATTTG
      S  S  P  Y  Q  T  I  Y  P  V  D  N  R  Y  F  S  S  E  Y  L
1561  GCCAGCTACAGATCTCTCACCGCCACCTACTACCCAGAATACGCAGCTAGTGCCCATGCT
      A  S  Y  R  S  L  T  A  T  Y  Y  P  E  Y  A  A  S  A  H  A
1621  GCTGCTGGCTACATTGGCAATGGCTACTTTGACGTGGCCTCGCCGAGGTCGCTCACCTCC
      A  A  G  Y  I  G  N  G  Y  F  D  V  A  S  P  R  S  L  T  S
1681  ATCCCCTATGACGCGGCCTCGCAATTCAACCGCTACTTTGAAGCGGACAAAGTCGACTGC
      I  P  Y  D  A  A  S  Q  F  N  R  Y  F  E  A  D  K  V  D  C
1741  AAGTACAACGTGCCCAACTCCGAATCGCCAAAAGCGGAATTC
      K  Y  N  V  P  N  S  E  S  P  K  A  E  F
```
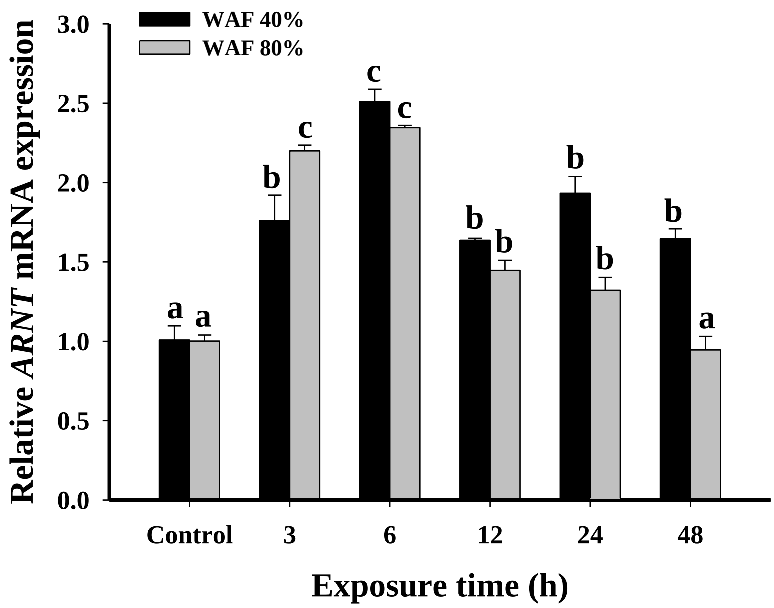

B) Aryl hydrocarbon receptor nuclear translocator (ARNT)

```
   1  ATGGCCATGCCCACCCACATGATGCAGCACCACCAGCAGCACCACCACCCCGAGGTGGCG
      M  A  M  P  T  H  M  M  Q  H  H  Q  Q  H  H  H  P  E  V  A
  61  CAGCTGCACCAGCCCGCCGGTCACCACCACCAGCCCGTCGTGCACCACGTGCAGGCCAAG
      Q  L  H  Q  P  A  G  H  H  H  Q  P  V  V  H  H  V  Q  A  K
 121  CGGCCTCGGCCGCAGCCGCAGCAGCAGCCTCAAAATCAGATCCTGGACGACCTCGACGGC
      R  P  R  P  Q  P  Q  Q  Q  P  Q  N  Q  I  L  D  D  L  D  G
 181  GACCCCATGCAGCAGAAGTACGGGCGCATGGACGCAGCCGCATCTGACCCGGCTGCGGCC
      D  P  M  Q  Q  K  Y  G  R  M  D  A  A  A  S  D  P  A  A  A
 241  GCGGCCGCGGCCCTCGCGGCCTCCGCGTCCCAGCTGGAGAACCCGGGGTCGGTGGGGCCG
      A  A  A  A  L  A  A  S  A  S  Q  L  E  N  P  G  S  V  G  P
 301  GAGAAGGAGAAGTACGCGCGGGAGAACCACTGCGAGATCGAGCGGCGGCGGCGGAACAAG
      E  K  E  K  Y  A  R  E  N  H  C  E  I  E  R  R  R  R  N  K
 361  ATGTCGGCCTACATCACGGAGCTGTCGGACATGGTGCCCACGTGCAACGCGCTGGCGCGC
      M  S  A  Y  I  T  E  L  S  D  M  V  P  T  C  N  A  L  A  R
 421  AAGCCCGACAAGCTGACCATCCTGCGCATGGCGGTGGCGCACATCAAGCAGCTGCGCGGG
      K  P  D  K  L  T  I  L  R  M  A  V  A  H  I  K  Q  L  R  G
 481  CTGCCGGCCACGCCCCCGCCCAACGACTCGTCGTACAAGCCGTCGTTCCTGACGGACGCG
      L  P  A  T  P  P  P  N  D  S  S  Y  K  P  S  F  L  T  D  A
 541  GAGCTGAAGCACCTGATCCTGGAGGCCGCGGACGGGTTCCTGTTCGTGGTGTCTTGCGAC
      E  L  K  H  L  I  L  E  A  A  D  G  F  L  F  V  V  S  C  D
 601  AGCGGGCGCGTGATCTACGTGTCGGACTCGGTGACGCCGGTGCTCAACCACACGCAGGCC
      S  G  R  V  I  Y  V  S  D  S  V  T  P  V  L  N  H  T  Q  A
 661  GACTGGTTCGGCACCTCCATCTACGACCACGTCCACCCCGAGGACACGGACAAGGTGAAG
      D  W  F  G  T  S  I  Y  D  H  V  H  P  E  D  T  D  K  V  K
 721  GAGCAGCTGTCGACGTCTCCGGACTCTTCCGGATCTTCAAGCAACAACGGCCGCATCCTC
      E  Q  L  S  T  S  P  D  S  S  G  S  S  S  N  N  G  R  I  L
 781  GATCTCAAGACGGGCACGGTGAAGAAGGAGGGCAGCCAGAGCTCGATGCGGCTCTGCATG
      D  L  K  T  G  T  V  K  K  E  G  S  Q  S  S  M  R  L  C  M
 841  GGCTCGCGCCGGGGCTTCATCTGCCGCATGCGCCTCGGCGCGGTCAACCCCGCCTCCCTA
      G  S  R  R  G  F  I  C  R  M  R  L  G  A  V  N  P  A  S  L
 901  GGCTACATGACCCGTGTGCGCACGCGCAACGTGCTCCGCGGCGCGAGCGTGACCGGGCAG
      G  Y  M  T  R  V  R  T  R  N  V  L  R  G  A  S  V  T  G  Q
 961  AGCGACGGGCACGGCGACTTCACCGTCGTCCACTGCACGGGCTACATCAAGAACTGGCCG
      S  D  G  H  G  D  F  T  V  V  H  C  T  G  Y  I  K  N  W  P
1021  CCCCAGGGCCTCGCCGCCCACCACCACCTGCACCACGAGGACAACGGCCACCACCCCGAC
      P  Q  G  L  A  A  H  H  H  L  H  H  E  D  N  G  H  H  P  D
1081  GCGTCGTCCTGCTGCCTCGTGGCCATCGGCCGCCTCCAGGTCACCTCCATGCCCAACAGC
      A  S  S  C  C  L  V  A  I  G  R  L  Q  V  T  S  M  P  N  S
1141  CACGACCTTTCCGGAGCCGGCGGATCGGAGTGCGCGCAGGAGTTCGTCTCGCGACACTCC
      H  D  L  S  G  A  G  G  S  E  C  A  Q  E  F  V  S  R  H  S
1201  ATGGACGGCAAGTTCACGTTCTGCGACCAGCGCGTCATCCCCCTCATGGGCTACAGCCCG
      M  D  G  K  F  T  F  C  D  Q  R  V  I  P  L  M  G  Y  S  P
1261  CCCGACCTCCTCGGCAAGTCCTGCTTCGACTTCATCCACGCCGAGGACCAGGGACACATG
      P  D  L  L  G  K  S  C  F  D  F  I  H  A  E  D  Q  G  H  M
1321  AAGGAGAGCTTCGACCAGGTCGTCAAGATGAAGGGCCAGGTCATGAACTTCATGTACCGA
      K  E  S  F  D  Q  V  V  K  M  K  G  Q  V  M  N  F  M  Y  R
1381  TTCAGGGCAAAGTCCAACGACTGGATCTGGCTCCGGACCACCGCATTCGCCTTCCTCAAC
      F  R  A  K  S  N  D  W  I  W  L  R  T  T  A  F  A  F  L  N
1441  CCCTACACCGACGACATGGAGTACGTCGTCTGCACCAACTCCACCAACGCCAAGGGCAAC
      P  Y  T  D  D  M  E  Y  V  V  C  T  N  S  T  N  A  K  G  N
1501  AGCAGCAACAGCGCCTCCACGCCCACCACCTCAACAGCCACGGACGAGTACCGGCCTCCG
      S  S  N  S  A  S  T  P  T  T  S  T  A  T  D  E  Y  R  P  P
1561  AACAACGCGGCCGCGGCCTCCGGCCTCGACTACAGCATCGG
      N  N  A  A  A  A  S  G  L  D  Y  S  I
```

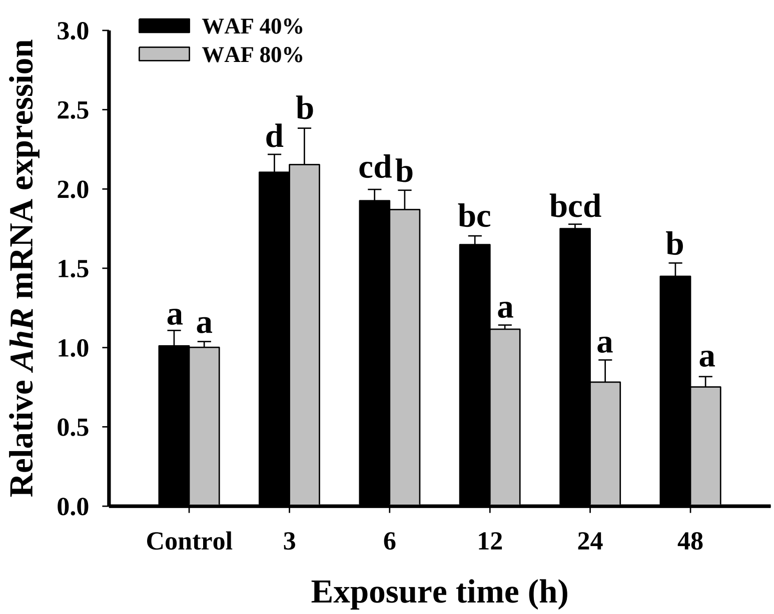
Fig. S9

A)



WAF 40%
WAF 80%
Relative *ARNT* mRNA expression
3.0
2.5
2.0
1.5
1.0
0.5
0.0
a
a
b
c
c
c
b
b
b
b
b
a
Control
3
6
12
24
48
Exposure time (h)

B)



WAF 40%
WAF 80%
Relative *AhR* mRNA expression
3.0
2.5
2.0
1.5
1.0
0.5
0.0
a
a
d
b
cd
b
bc
a
bcd
a
b
a
Control
3
6
12
24
48
Exposure time (h)