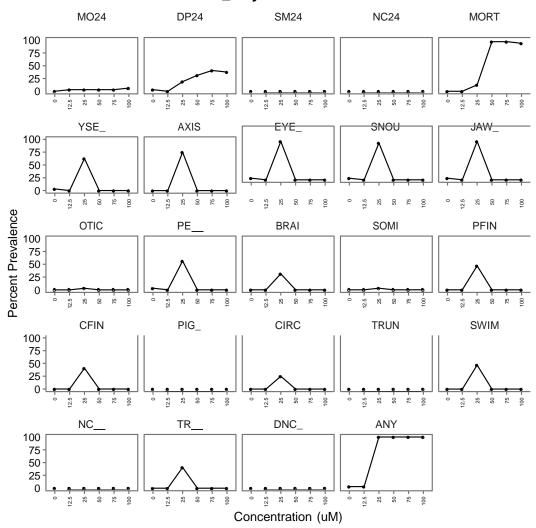
Supplemental Data 2.

Developmental toxicity profiles, logistic model output, calculated EC values, and logistic regression curves for the 25 test chemicals. Each page represents an individual test chemical. Developmental toxicity for the 24 uniquely measured endpoints at 24 or 120 hpf are shown in the top panel. The Left-bottom panel indicates the model output from logistic regression of the binarized data for any observed morbidity or mortality by 120 hpf. Right bottom panel indicates the calculated EC values and the logistic regression curves of the fitted data. Abbreviations: MO24, 24 hpf mortality; DP24, 24 hpf developmental delay; SM24; 24 hpf somites; NC24, 24 hpf notochord; MORT, 120 hpf mortality; YSE, 120 hpf yolk sac edema; AXIS, 120 hpf axis; EYE; 120 hpf eye; SNOU, 120 hpf snout; JAW_, 120 hpf jaw; OTIC, 120 hpf otic vesicle; PE_, 120 hpf pericardial edema; BRAI, 120 hpf brain; PFIC, 120 hpf pectoral fin; CFIN, 120 hpf caudal fin; PIG , 120 hpf pigmentation; CIRC, 120 hpf circulation; TRUN, 120 hpf truncation; SWIM, 120 hpf swim bladder; NC_, 120 hpf notochord; TR_, 120 hpf touch response; DNC, not counted due to technical or other error during sampling; ANY, summation of any morbidity or mortality effect

5a_dihydrotestosterone



Model Output:

Call:

glm(formula = ANY ~ CONC, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -0.4420 -0.0259 0.0000 0.0008 3.9997

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

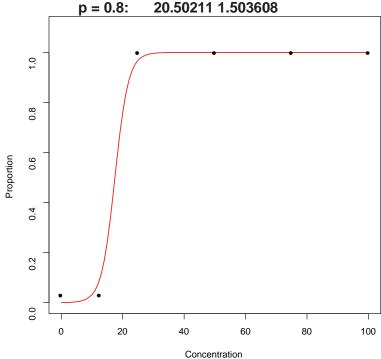
Null deviance: 241.555 on 191 degrees of freedom Residual deviance: 28.834 on 190 degrees of freedom

AIC: 32.834

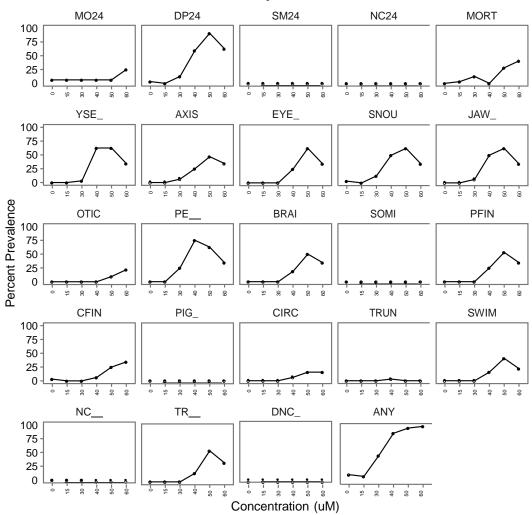
Number of Fisher Scoring iterations: 10

EC Values:

Concentration SE p = 0.5: 17.47358 1.195250 p = 0.6: 18.35937 1.261757 p = 0.7: 19.32461 1.358456



17_methyltestosterone



Model Output:

glm(formula = ANY ~ CONC, family = binomial("logit"), data = logit_df)

Deviance Residuals:

1Q Median 3Q Max -2.3849 -0.6199 0.1884 0.6218 2.6239

Coefficients:

Estimate Std. Error z value Pr(>|z|) CONC

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

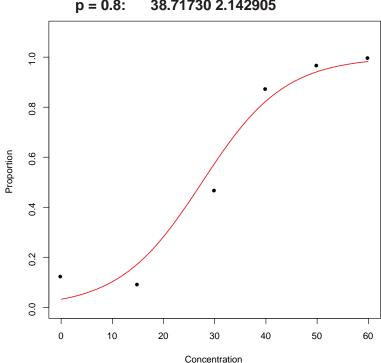
(Dispersion parameter for binomial family taken to be 1)

Null deviance: 260.12 on 191 degrees of freedom Residual deviance: 131.97 on 190 degrees of freedom AIC: 135.97

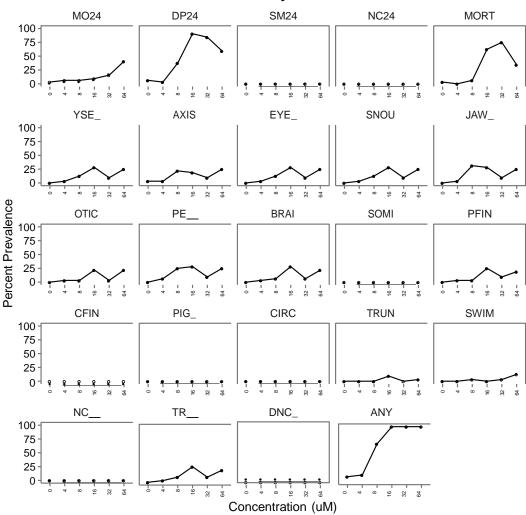
Number of Fisher Scoring iterations: 5

EC Values:

Concentration SE 27.52669 1.818322 p = 0.5: p = 0.6: 30.79973 1.792332 34.36635 1.884816 p = 0.7: 38.71730 2.142905 p = 0.8:



17a_ethinylestradiol



Model Output:

Call:

glm(formula = ANY ~ CONC, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.4726 -0.2772 0.0000 0.1426 2.5606

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

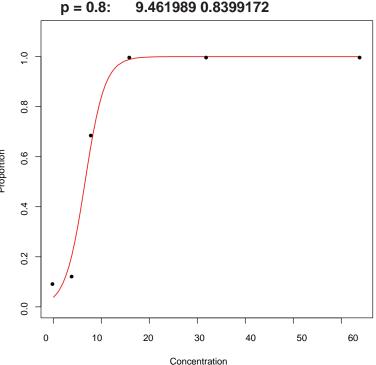
(Dispersion parameter for binomial family taken to be 1)

Null deviance: 248.371 on 191 degrees of freedom Residual deviance: 88.311 on 190 degrees of freedom AIC: 92.311

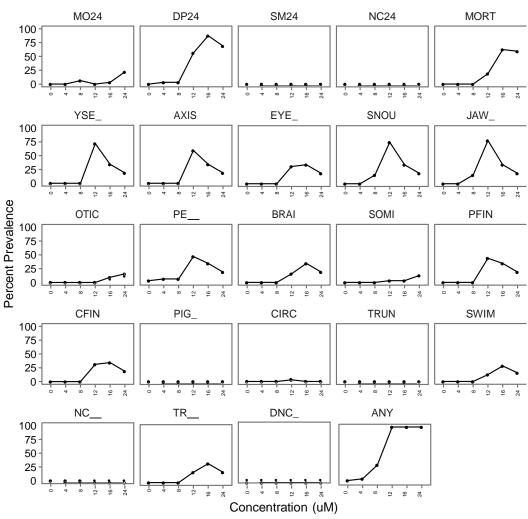
Number of Fisher Scoring iterations: 9

EC Values:

Concentration SE p = 0.5: 6.626547 0.5579331 p = 0.6: 7.455861 0.6087623 p = 0.7: 8.359558 0.6985086 p = 0.8: 9.461989 0.8399172



17b_estradiol



Model Output:

Call:

 $glm(formula = ANY \sim CONC_log, family = binomial("logit"), data = logit_df)$

Deviance Residuals:

Min 1Q Median 3Q Max -1.51390 -0.11850 0.07363 0.41304 3.15034

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

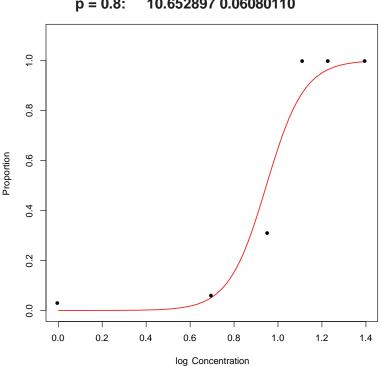
Null deviance: 248.37 on 191 degrees of freedom Residual deviance: 107.13 on 190 degrees of freedom AIC: 111.13

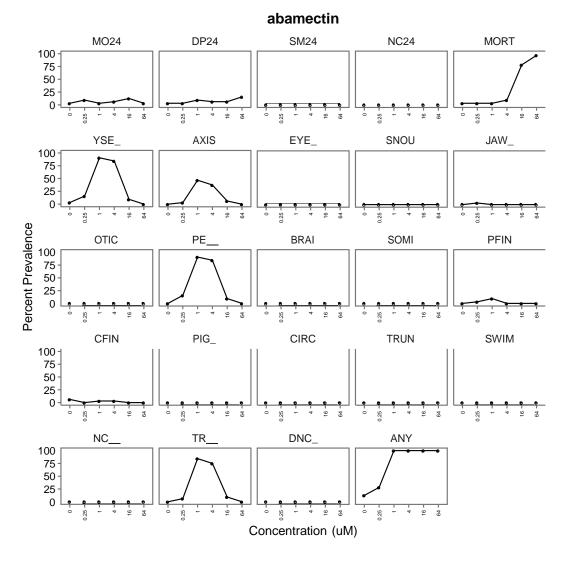
410. 111.13

Number of Fisher Scoring iterations: 6

EC Values:

Concentration SE.log
p = 0.5: 7.856496 0.05616197
p = 0.6: 8.596602 0.05370714
p = 0.7: 9.473682 0.05470802
p = 0.8: 10.652897 0.06080110





Call: glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -0.94613 -0.38387 0.00002 0.00378 2.29985

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

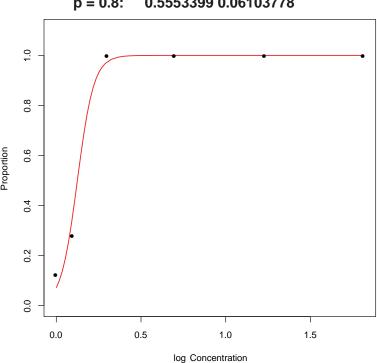
(Dispersion parameter for binomial family taken to be 1)

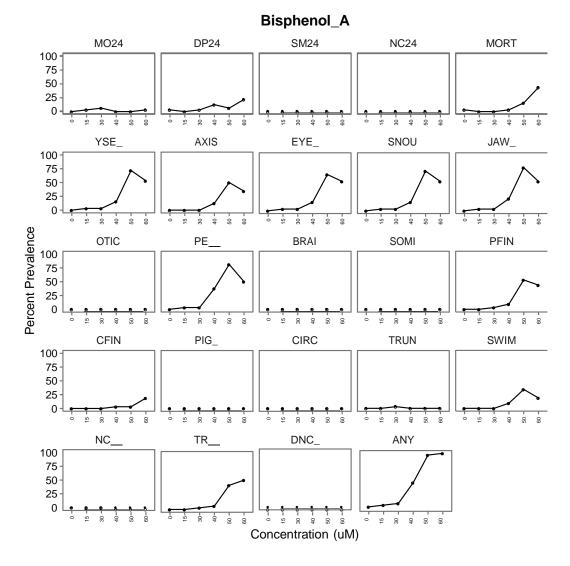
Null deviance: 222.282 on 191 degrees of freedom Residual deviance: 65.881 on 190 degrees of freedom AIC: 69.881

Number of Fisher Scoring iterations: 9

EC Values:

Concentration SE.log
p = 0.5: 0.3323731 0.03877618
p = 0.6: 0.3940567 0.04372087
p = 0.7: 0.4645288 0.05080763
p = 0.8: 0.5553399 0.06103778





Call

glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.7626 -0.2432 -0.0008 0.6894 5.4841

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

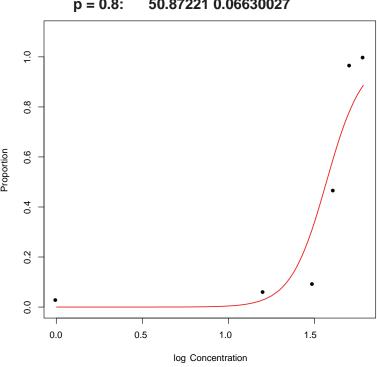
Null deviance: 263.16 on 191 degrees of freedom Residual deviance: 147.20 on 190 degrees of freedom AIC: 151.2

AIC. 131.2

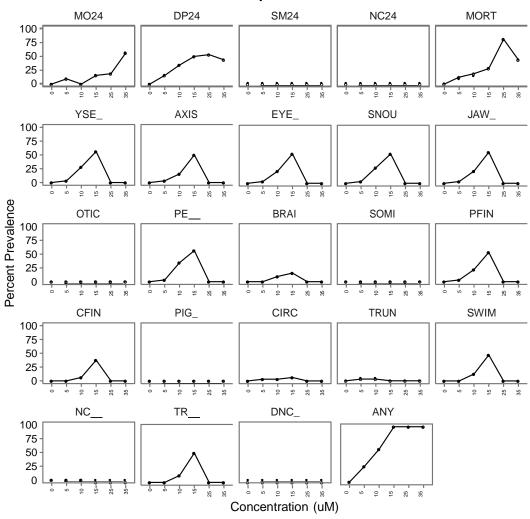
Number of Fisher Scoring iterations: 7

EC Values:

Concentration SE.log
p = 0.5: 36.16904 0.05221240
p = 0.6: 39.97500 0.05026920
p = 0.7: 44.56738 0.05433598
p = 0.8: 50.87221 0.06630027



Bisphenol_AF



Model Output:

Call·

glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.65862 -0.02165 0.07961 0.38597 1.75674

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

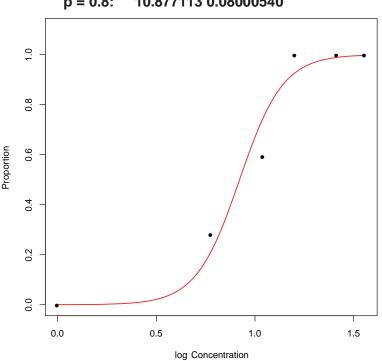
(Dispersion parameter for binomial family taken to be 1)

Null deviance: 249.595 on 191 degrees of freedom Residual deviance: 91.381 on 190 degrees of freedom AIC: 95.381

Number of Fisher Scoring iterations: 7

EC Values:

Concentration SE.log
p = 0.5: 7.352511 0.07359671
p = 0.6: 8.258394 0.07032117
p = 0.7: 9.357744 0.07172202
p = 0.8: 10.877113 0.08000540



butylparaben SM24 MO24 DP24 NC24 **MORT** 100 75 50 25 YSE **AXIS** EYE SNOU JAW 100 75 50 25 Percent Prevalence OTIC **BRAI** SOMI **PFIN** 100 75 50 25 CFIN PIG_ CIRC TRUN SWIM 100 75 50 25 NC_ DNC_ **ANY** 100 75 50 25

Concentration (uM)

Model Output:

Call: glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.2279 -0.6605 -0.3842 0.4670 2.2990

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

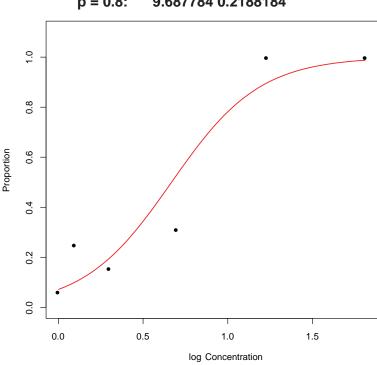
(Dispersion parameter for binomial family taken to be 1)

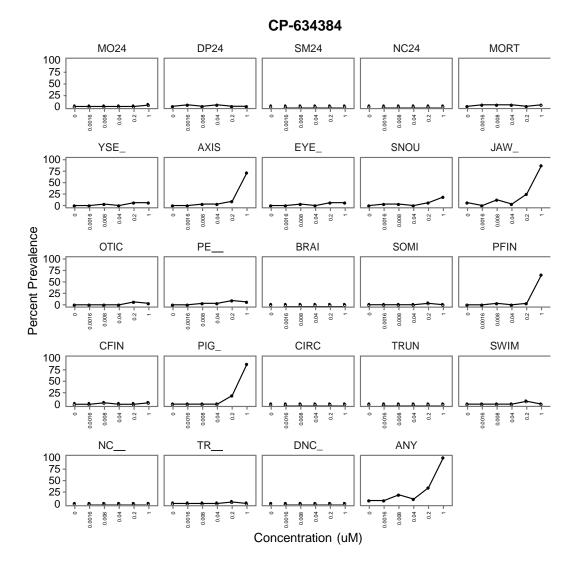
Null deviance: 265.15 on 191 degrees of freedom Residual deviance: 138.62 on 190 degrees of freedom AIC: 142.62

Number of Fisher Scoring iterations: 5

EC Values:

Concentration SE.log
p = 0.5: 3.658728 0.1443856
p = 0.6: 4.939393 0.1587761
p = 0.7: 6.738862 0.1821907
p = 0.8: 9.687784 0.2188184





glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -0.9697 -0.5092 -0.4242 0.1328 2.2218

Coefficients:

Estimate Std. Error z value Pr(>|z|) CONC_log 23.6075 4.7844 4.934 8.04e-07 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

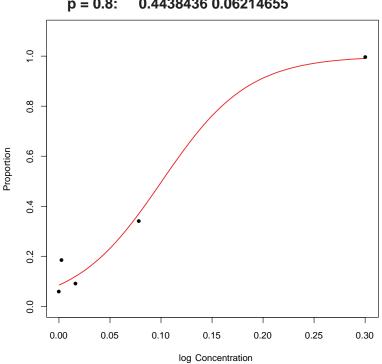
Null deviance: 231.80 on 191 degrees of freedom Residual deviance: 126.14 on 190 degrees of freedom

AIC: 130.14

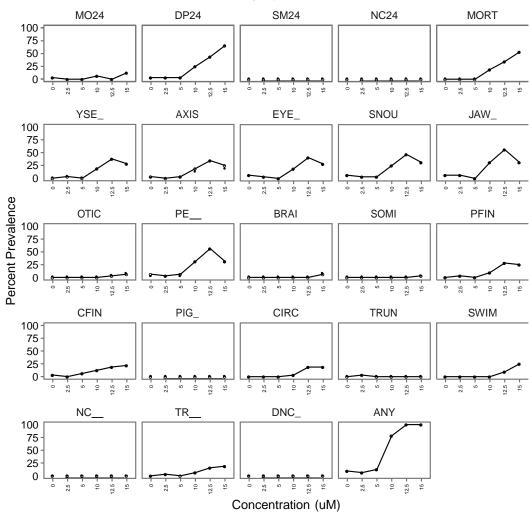
Number of Fisher Scoring iterations: 6

EC Values:

Concentration SE.log 0.2612395 0.03699463 p = 0.5: p = 0.6: 0.3121177 0.04384646 p = 0.7: 0.3698991 0.05186088 0.4438436 0.06214655 p = 0.8:



Diisobutyl_phthalate



Model Output:

Call: glm(formula = ANY ~ CONC, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.8456 -0.3776 0.1691 0.3319 2.8259

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

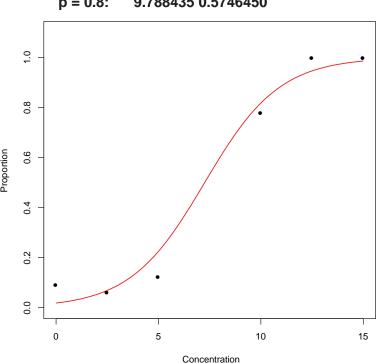
Null deviance: 266.09 on 191 degrees of freedom Residual deviance: 104.57 on 190 degrees of freedom

AIC: 108.57

Number of Fisher Scoring iterations: 6

EC Values:

Concentration SE p = 0.5: 7.256982 0.4708762 p = 0.6: 7.997385 0.4823395 p = 0.7: 8.804197 0.5139485 p = 0.8: 9.788435 0.5746450



Dimethipin MO24 DP24 SM24 NC24 **MORT** 100 75 50 25 EYE_ SNOU YSE_ **AXIS** JAW_ 100 75 50 25 Percent Prevalence OTIC PΕ **BRAI** SOMI **PFIN** 100 75 50 25 0 **CFIN** PIG CIRC **TRUN SWIM** 100 75 50 25 0 NC_ DNC_ ANY 100 75 50 25

Concentration (uM)

Model Output:

glm(formula = ANY ~ CONC, family = binomial("logit"), data = logit_df)

Deviance Residuals:

1Q Median 3Q Max -2.0517 -0.4032 -0.2814 0.5098 2.8175

Coefficients:

Estimate Std. Error z value Pr(>|z|) CONC

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

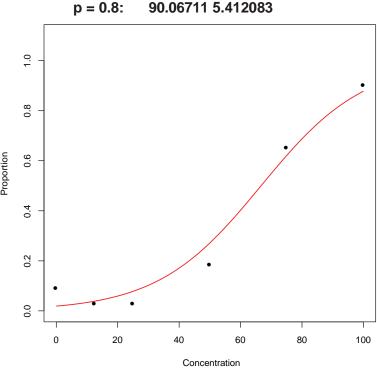
Null deviance: 240.05 on 191 degrees of freedom Residual deviance: 137.65 on 190 degrees of freedom

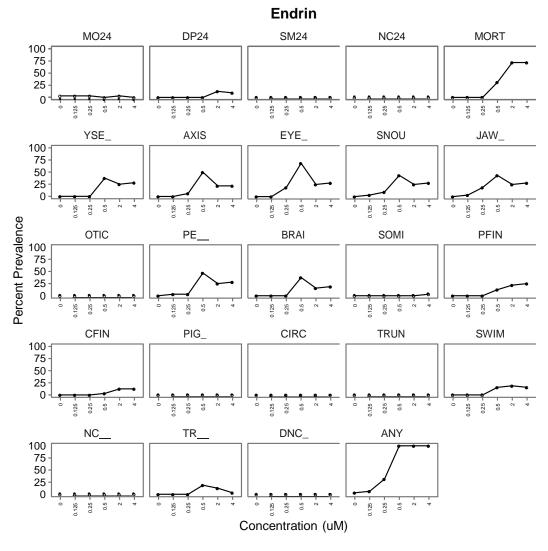
AIC: 141.65

Number of Fisher Scoring iterations: 5

EC Values:

Concentration SE 66.66883 3.741229 p = 0.5: p = 0.6: 73.51239 4.047338 80.96977 4.576616 p = 0.7:





glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -0.9689 -0.3515 0.0000 0.0002 3.2445

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

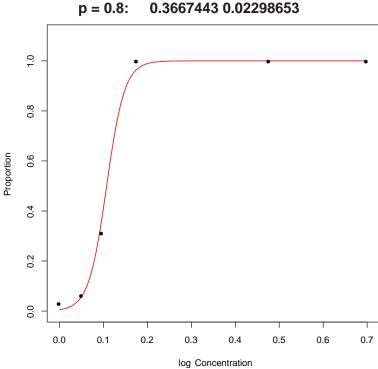
Null deviance: 262.64 on 191 degrees of freedom Residual deviance: 68.28 on 190 degrees of freedom

AIC: 72.28

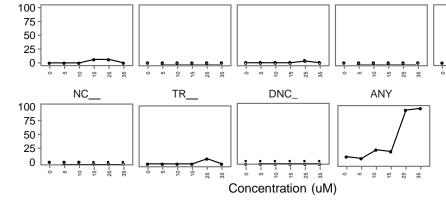
Number of Fisher Scoring iterations: 9

EC Values:

Concentration SE.log
p = 0.5: 0.2804947 0.01554328
p = 0.6: 0.3051420 0.01712235
p = 0.7: 0.3325405 0.01948519
p = 0.8: 0.3667443 0.02298653



Genistein MO24 DP24 SM24 NC24 **MORT** 100 75 50 25 YSE_ AXIS EYE_ SNOU JAW_ 100 75 50 25 0 Percent Prevalence OTIC SOMI **BRAI PFIN** 100 75 50 25 0 CFIN PIG_ CIRC **TRUN** SWIM



Model Output:

Call: glm(formula = ANY ~ CONC, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -2.0022 -0.7185 -0.2722 0.5380 2.5746

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

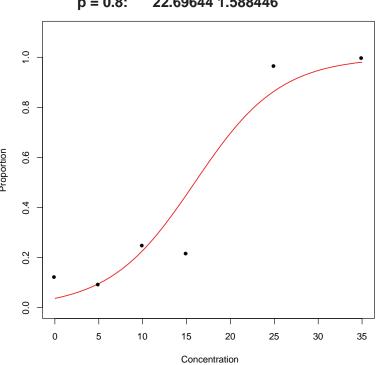
Null deviance: 263.64 on 191 degrees of freedom Residual deviance: 139.98 on 190 degrees of freedom

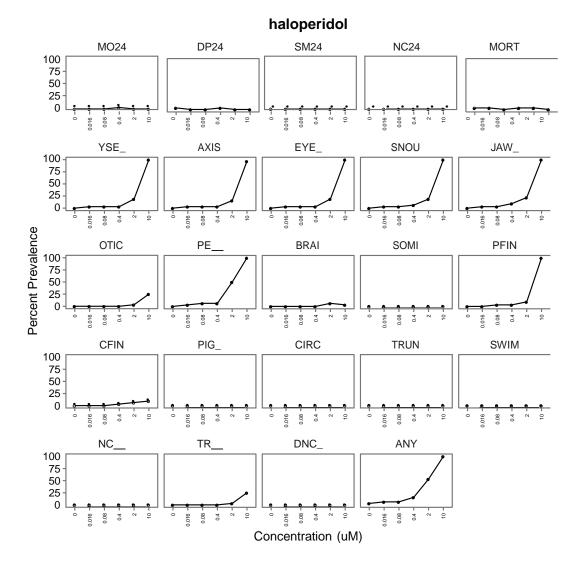
AIC: 143.98

Number of Fisher Scoring iterations: 5

EC Values:

Concentration SE p = 0.5: 15.94980 1.078416 p = 0.6: 17.92307 1.176533 p = 0.7: 20.07332 1.338486 p = 0.8: 22.69644 1.588446





Call:

glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.3082 -0.3543 -0.3243 0.1753 2.4561

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

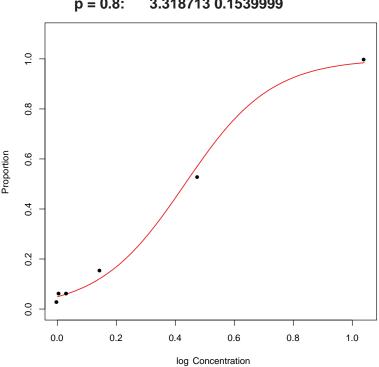
Null deviance: 236.90 on 191 degrees of freedom Residual deviance: 112.67 on 190 degrees of freedom

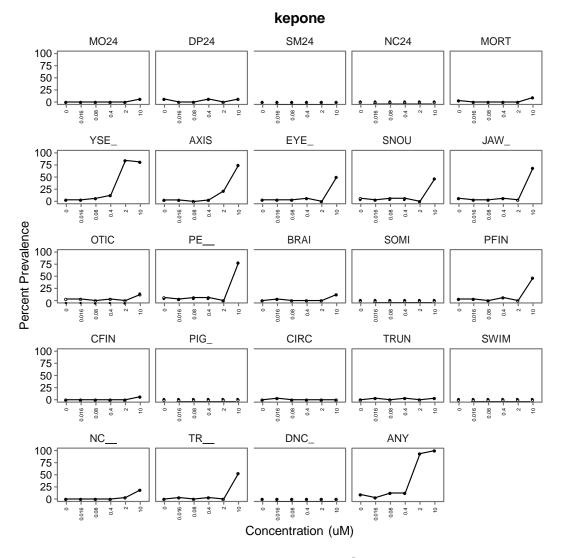
AIC: 116.67

Number of Fisher Scoring iterations: 6

EC Values:

Concentration SE.log
p = 0.5: 1.710062 0.1004594
p = 0.6: 2.105777 0.1132710
p = 0.7: 2.603049 0.1302349
p = 0.8: 3.318713 0.1539999





Calle

glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -2.21041 -0.39247 -0.32852 0.01963 2.42748

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

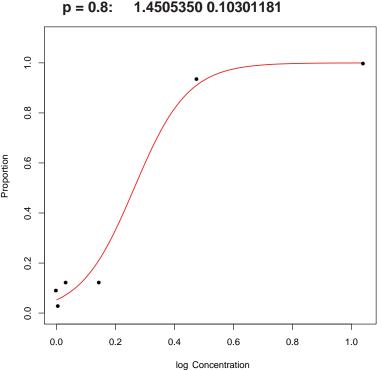
Null deviance: 255.995 on 191 degrees of freedom Residual deviance: 96.431 on 190 degrees of freedom

AIC: 100.43

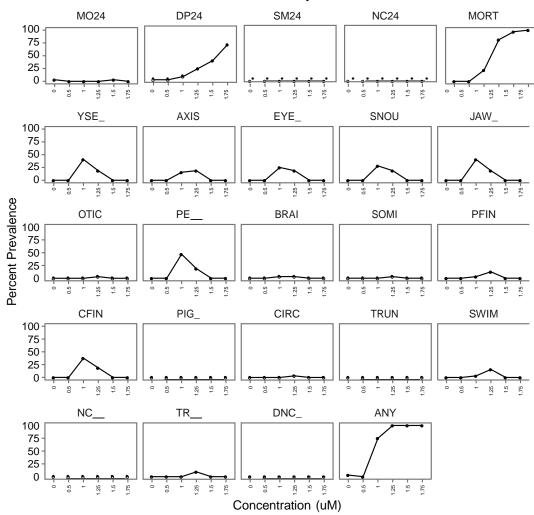
Number of Fisher Scoring iterations: 7

EC Values:

Concentration SE.log
p = 0.5: 0.8329025 0.07020508
p = 0.6: 0.9953889 0.07831717
p = 0.7: 1.1888922 0.08871710
p = 0.8: 1.4505350 0.10301181



Pentachlorophenol



Model Output:

Call:

 $glm(formula = ANY \sim CONC, family = binomial("logit"), data = logit_df)$

Deviance Residuals:

Min 1Q Median 3Q Max -1.7269 -0.0329 0.0286 0.2531 3.8783

Coefficients:

Estimate Std. Error z value Pr(>|z|) (Intercept) -7.520 1.523 -4.938 7.87e-07 *** CONC 8.756 1.547 5.660 1.52e-08 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

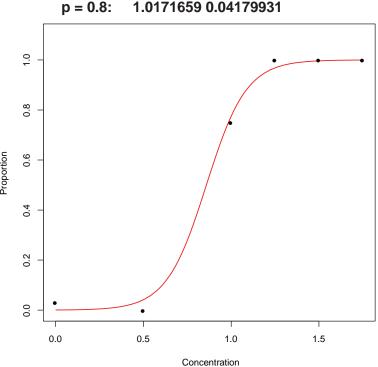
Null deviance: 253.00 on 191 degrees of freedom Residual deviance: 56.19 on 190 degrees of freedom

AIC: 60.19

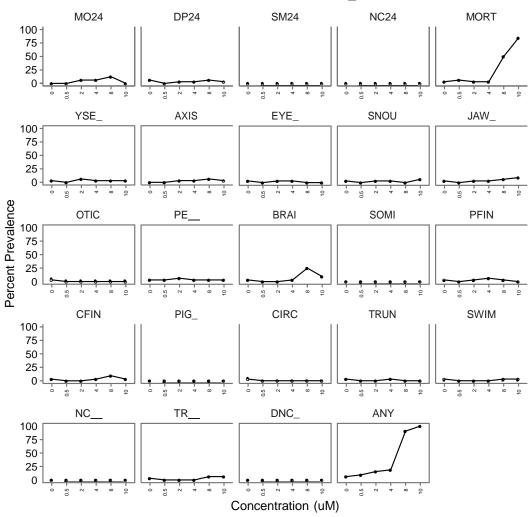
Number of Fisher Scoring iterations: 7

EC Values:

Concentration SE
p = 0.5: 0.8588398 0.04402178
p = 0.6: 0.9051472 0.04147522
p = 0.7: 0.9556081 0.04043983
p = 0.8: 1.0171659 0.04179931



Perfluoroocatnesulfonic_acid



Model Output:

Call: glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.8455 -0.6369 -0.1497 0.4924 2.9992

Coefficients:

Signif. codes: 0 "*** 0.001 "** 0.01 "* 0.05 ". 0.1 " 1

(Dispersion parameter for binomial family taken to be 1)

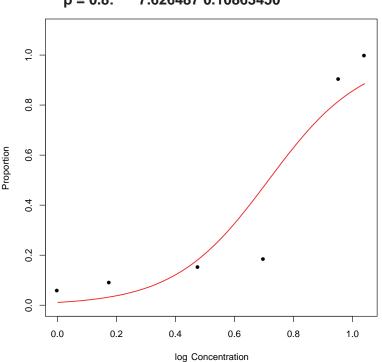
Null deviance: 258.60 on 191 degrees of freedom Residual deviance: 141.07 on 190 degrees of freedom

AIC: 145.07

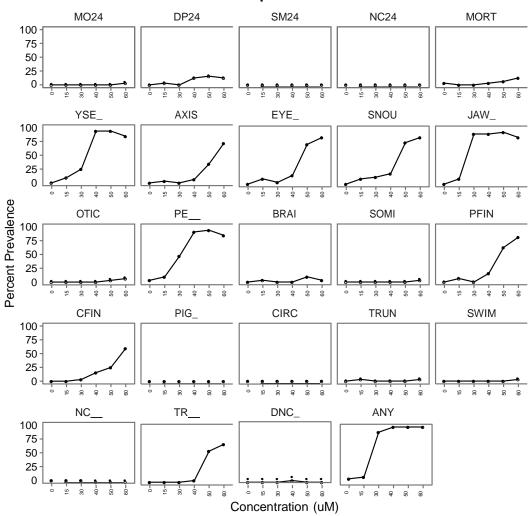
Number of Fisher Scoring iterations: 5

EC Values:

Concentration SE.log
p = 0.5: 4.187089 0.08110138
p = 0.6: 5.019158 0.08340946
p = 0.7: 6.078532 0.09185229
p = 0.8: 7.626487 0.10863450



Propiconazole



Model Output:

Call.

glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.9077 -0.0086 0.2611 0.3771 4.5197

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

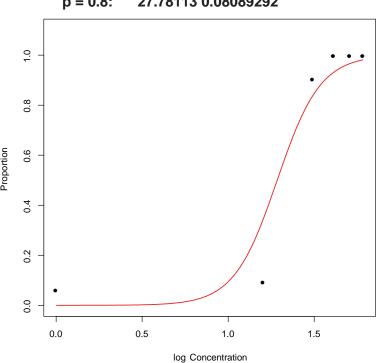
Null deviance: 241.55 on 191 degrees of freedom Residual deviance: 100.88 on 190 degrees of freedom

AIC: 104.88

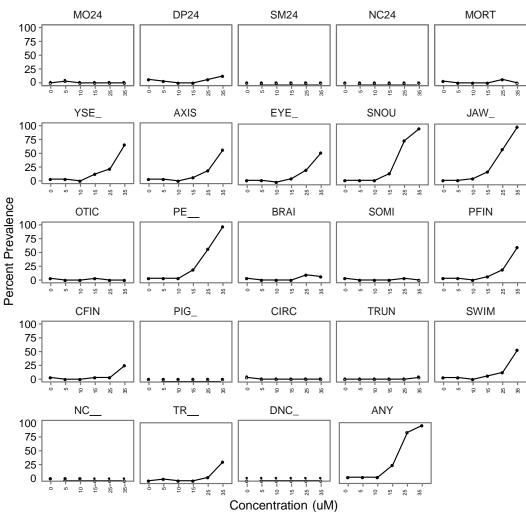
Number of Fisher Scoring iterations: 7

EC Values:

Concentration SE.log
p = 0.5: 18.26342 0.08914680
p = 0.6: 20.66380 0.08080198
p = 0.7: 23.62127 0.07705336
p = 0.8: 27.78113 0.08089292



Propylparaben



Model Output:

Call:

 $glm(formula = ANY \sim CONC_log, family = binomial("logit"), data = logit_df)$

Deviance Residuals:

Min 1Q Median 3Q Max -1.7005 -0.6783 -0.0212 0.4730 4.0997

Coefficients:

Estimate Std. Error z value Pr(>|z|) (Intercept) -8.404 1.272 -6.606 3.95e-11 *** CONC_log 6.771 1.011 6.701 2.08e-11 ***

Signif. codes: 0 "*** 0.001 "** 0.01 "* 0.05 ". 0.1 " 1

(Dispersion parameter for binomial family taken to be 1)

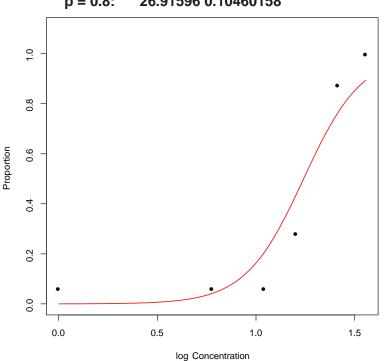
Null deviance: 256.91 on 191 degrees of freedom Residual deviance: 144.15 on 190 degrees of freedom

AIC: 148.15

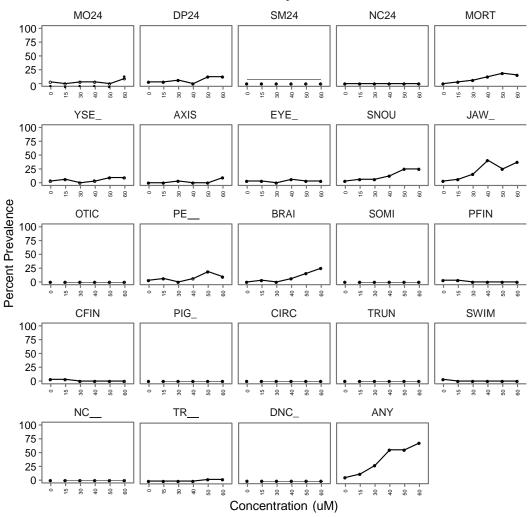
Number of Fisher Scoring iterations: 6

EC Values:

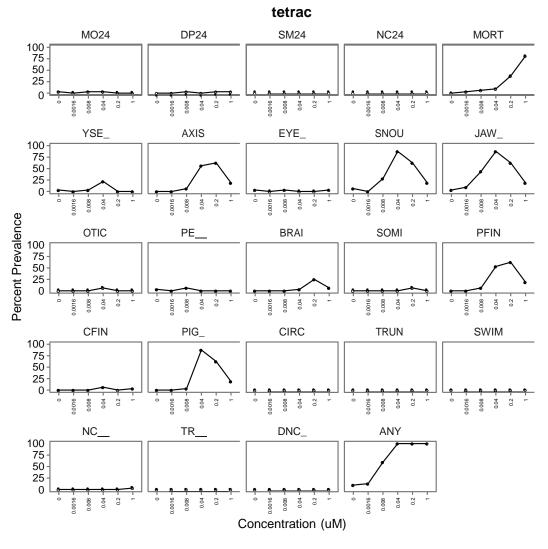
Concentration SE.log
p = 0.5: 16.42256 0.07319316
p = 0.6: 18.99837 0.07625754
p = 0.7: 22.24067 0.08604209
p = 0.8: 26.91596 0.10460158



Raloxifene_hydrochloride



Precipitation at 60 uM EC set to 50 uM



glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.33781 -0.41845 0.00000 0.00523 2.22666

Coefficients:

Signif. codes: 0 "*** 0.001 "** 0.01 "* 0.05 ". 0.1 " 1

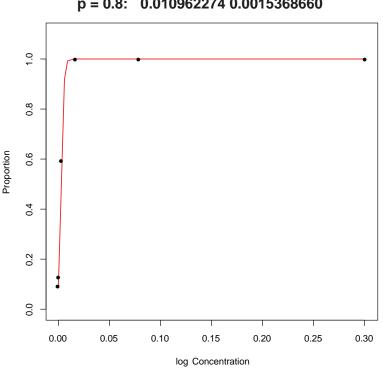
(Dispersion parameter for binomial family taken to be 1)

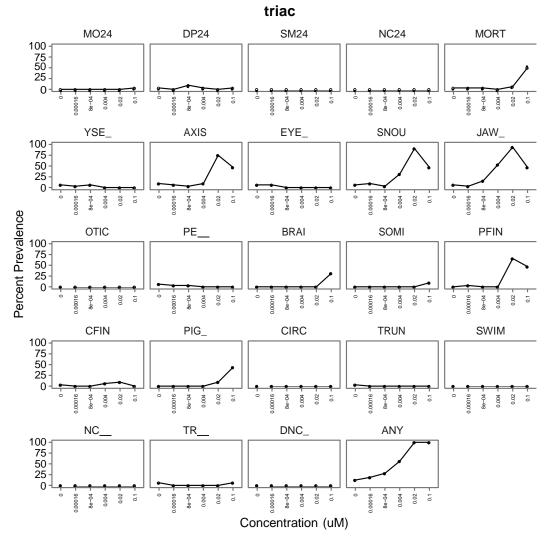
Null deviance: 251.908 on 191 degrees of freedom Residual deviance: 87.339 on 190 degrees of freedom AIC: 91.339

Number of Fisher Scoring iterations: 12

EC Values:

Concentration SE.log
p = 0.5: 0.006925638 0.0008944543
p = 0.6: 0.008104608 0.0010476304
p = 0.7: 0.009390896 0.0012536536
p = 0.8: 0.010962274 0.0015368660





glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -1.30825 -0.63217 0.00000 0.02898 1.88198

Coefficients:

Estimate Std. Error z value Pr(>|z|) (Intercept) -1.5844 0.2812 -5.635 1.75e-08 *** CONC_log 1088.3107 267.2499 4.072 4.66e-05 ***

Signif. codes: 0 "*** 0.001 "** 0.01 "* 0.05 ". 0.1 " 1

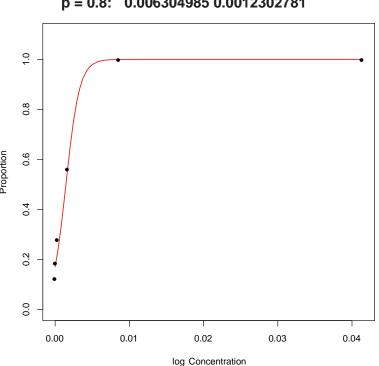
(Dispersion parameter for binomial family taken to be 1)

Null deviance: 265.65 on 191 degrees of freedom Residual deviance: 137.89 on 190 degrees of freedom AIC: 141.89

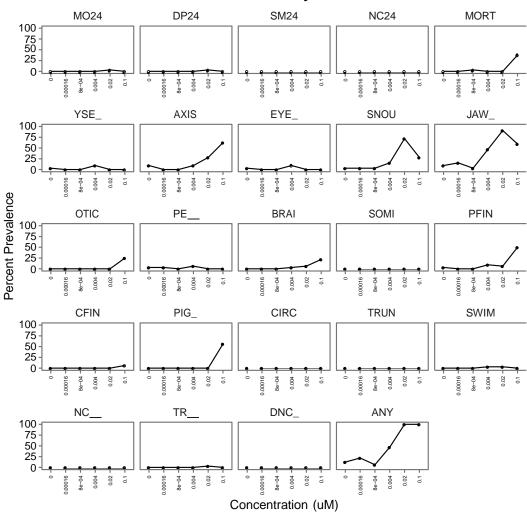
Number of Fisher Scoring iterations: 9

EC Values:

Concentration SE.log
p = 0.5: 0.003357774 0.0006154304
p = 0.6: 0.004218884 0.0007765824
p = 0.7: 0.005158071 0.0009740526
p = 0.8: 0.006304985 0.0012302781



335_triiodothyronine



Model Output:

Call:

 $glm(formula = ANY \sim CONC_log, family = binomial("logit"), \, data = logit_df)$

Deviance Residuals:

Min 1Q Median 3Q Max -1.10392 -0.52880 -0.51132 0.04428 2.04905

Coefficients:

Estimate Std. Error z value Pr(>|z|) (Intercept) -1.9686 0.3144 -6.261 3.83e-10 *** CONC_log 1034.3437 268.4446 3.853 0.000117 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

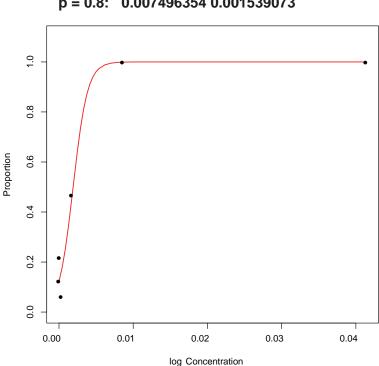
Null deviance: 265.84 on 191 degrees of freedom Residual deviance: 122.04 on 190 degrees of freedom

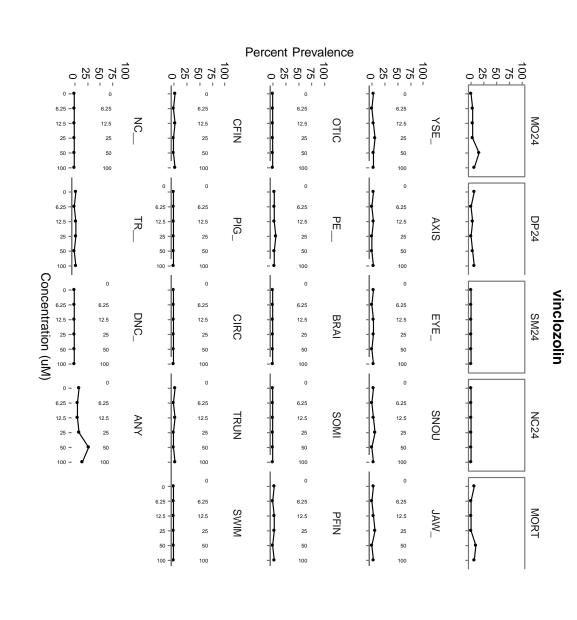
AIC: 126.04

Number of Fisher Scoring iterations: 9

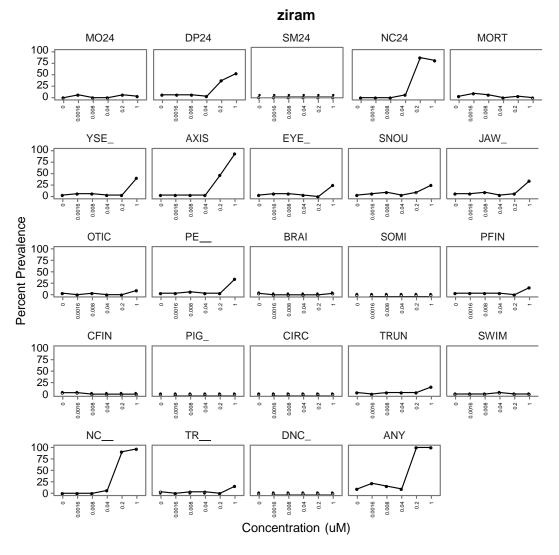
EC Values:

Concentration SE.log
p = 0.5: 0.004391939 0.000824545
p = 0.6: 0.005298931 0.001020142
p = 0.7: 0.006288207 0.001248666
p = 0.8: 0.007496354 0.001539073





No significant mortality or malformations at 100 uM EC set to 50 uM



Call: glm(formula = ANY ~ CONC_log, family = binomial("logit"), data = logit_df)

Deviance Residuals:

Min 1Q Median 3Q Max -0.7892 -0.5156 -0.4602 0.2670 2.1436

Coefficients:

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 262.07 on 191 degrees of freedom Residual deviance: 113.30 on 190 degrees of freedom AIC: 117.3

Number of Fisher Scoring iterations: 8

EC Values:

Concentration SE.log
p = 0.5: 0.07524232 0.01153387
p = 0.6: 0.08977064 0.01342361
p = 0.7: 0.10582567 0.01568328
p = 0.8: 0.12573198 0.01861909

