AOP: 376 Concentration-response Concordance Evaluation Table

Reference	Taxonomic Applicability	Life stage/ exposure period	Experiment			KE 25	KE 1790	KE1791	KE 360	Notes
			Type/ Treatment	Concentrations	Additional Exposure Details	Agonism, Androgen receptor	Increased, Differentiation to Testis	Increased, Male Biased Sex Ratio	Decrease, Population Trajectory	
Baumann et al., 2015	Zebrafish (Danio rerio)	0-60 days post hatch (dph)	17β-trenbolone	1 ng/L, 3 ng/L. 10, ng/L, 30 ng/L			Evidenced via histology examinations	Observed		
	Zebrafish (Danio rerio)	0-60 dph	17β-trenbolone	1 ng/L, 3 ng/L. 10, ng/L, 30 ng/L	With a recovery period of 40 days (sampled at 100 dph)		Evidenced via histology examinations	Observed		
	Zebrafish (Danio rerio)	0-100 dph	17β-trenbolone	1 ng/L, 3 ng/L. 10, ng/L, 30 ng/L			Evidenced via histology examinations For fish exposed for 100 d to 10 ng/L or 30 ng/L 17β-trenbolone, Masculinization occurred at different biological effect levels in a concentration-dependent manner as evidenced from a significantly increased maturity of testes	Observed		
Morthorst et al., 2010	Zebrafish (Danio rerio)	1 dpf-60 dph	17β-trenbolone	9.2, 15.5 and 26.2 ng/L.			Evidenced via histology examinations. Sperm stage increased in a concentration dependent manner. The percentage of M1 and M2 males decreased as the trenbolone concentration increased whereas the percentage of M3 males increased as the concentration increased.	100% male populations were found at 15.5 and 26.2 ng/L		For histology, male fish were classified as sperm stage M1 (sperm ducts but no spermatozoa), M2 (few/moderate spermatozoa) or M3 (abundant spermatozoa).
	Zebrafish (Danio rerio)	1 dpf-60 dph	17β-trenbolone	9.2, 15.5 and 26.2 ng/L.	With a recovery period of 170 days (sampled at 230 dph)		After the depuration period all males exposed to 9.2 ng/L were classified in stage M3. An increasing amount of M1 and M2 males were observed as the concentration increased	100% male populations were found at 15.5 and 26.2 ng/L		
	Zebrafish (Danio rerio)	1 dpf-230 dph	17β-trenbolone	9.2, 15.5 and 26.2 ng/L.	Exposed for 230 continuous days		All three developmental stages were present except at 15.5 ng/L, where only M3 males were found	100% male populations were found at 15.5 and 26.2 ng/L		
Larsen & Baatrup, 2010	Zebrafish (Danio rerio)	1 dph until 150 dph	17β-trenbolone	20 ng/L			N/A (Sex was identified at mature stage)	98% males compared with 74% in the control group		
Orn et al., 2006	Zebrafish (Danio rerio)	1–60 dph	17β-trenbolone	10 and 50 ng/L			Histologic evaluation revealed that exposure to 50 ng/L Tb resulted in significant increases in both testes area and percentage of spermatozoa.	Exposure to 50 ng/L Tb resulted in 100% phenotypic male fish		
	Japanese medaka (Oryzias latipes)	1–60 dph	17β-trenbolone	10 and 50 ng/L			A significant increase in sperm percentage was recorded	No effect in sex ratio		
Seki et al., 2004	Japanese medaka (Oryzias latipes)	12 hpf - 101 dpf	Methyltestosterone	0.35, 1.09, 3.29, 9.98, and 27.75 ng/L	Full life-cycle test (FFLC)		Induced masculinization of both secondary sex characteristics and gonads	observed; all fish in the 27.75-ng/L treatment group showed male secondary sex characteristics in which no fish with ovary could be discerned		
Orn et al., 2003	Zebrafish (Danio rerio)	20 dph-60 dph	Methyltestosterone	26, 50, 100, 260, 500 and 1000 ng/L				Observed; After exposure to MT no females were present in any of the exposed groups		
Orn et al., 2016	Zebrafish (Danio rerio)	20 dph-60 dph	17β-trenbolone	Binary mixtures of Tb (1, 10, and 50 ng/L) and EE2 (2 and 5 ng/L).				Masculinization effects with male-biased sex ratios were observed when fish were exposed to 2 ng/L of EE2 in combination with Tb concentrations.		
Baumann et al., 2013	Zebrafish (Danio rerio)	0–60 dph	17β-trenbolone	1, 3, 10 30 ng/L				Observed; at 10 and 30 ng//L where fish were 90 and 100% males respectively		
	Zebrafish (Danio rerio)	0–60 dph	Dihydrotestosterone	100, 320 and 1000 ng/L				Observed; at 100ng/L 84% were males and at >300 ng/L all fish developed as males.		
Shi et al., 2018	Zebrafish (Danio rerio)	21 to 140 dpf	Dihydrotestosterone	3.39, 33.1, and 329 ng/L			Observed via the upregulation of dmrt1(1.83-fold) and apoptosis-related genes but suppressed the transcription of cyp19a1a (3.16-fold) during the sex differentiation period	Observed; exposure to 329 ng/L resulted in 98% of the fish to develop as males		At 35 dpf, 9 larvae from each replicate (n = 4) were randomly taken for qPCR analysis Histology was performed at 140 days
Bogers et al., 2006	Fathead minnow (Pimephales promelas)	0–114 dph	Methyltestosterone	0.1, 0.32, 1 µg/L				Observed; Fish exposed to 0.1 µg/L all had developed testes with one fish showing mixed sex (testis–ova). Exposure to 0.32 µg/L resulted in 80% males and 20% mixed gonads		
	Fathead minnow (Pimephales promelas)	0-30 dph	Methyltestosterone	1 µg/L				No observed. Almost all gonads of 30-dph fish exposed to MDHT concentrations of 0.1 and 0.32 µg/L were sexually undifferentiated		
	Fathead minnow (Pimephales promelas)	0-63 dph	Methyltestosterone	1 µg/L				AT 0.1 µg/L AND 0.32 µg/L only 5% of the fish had a female gonad (significant compared with the control), up to 40% at 0.32µg/L−1 were still sexually undifferentiated, and up to 25% (at 0.32µg/L) had mixed sex gonads		

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