

Table 1. Docosahexaenoic acid incorporation coefficients k* in iPLA₂β^{+/+}, iPLA₂β^{+/-}, and iPLA₂β^{-/-} mice in response to arecoline, in regions with statistically significant genotype x drug interactions

Brain region	iPLA ₂ β ^{+/+}		iPLA ₂ β ^{+/-}		iPLA ₂ β ^{-/-}	
	Saline	Arecoline	Saline	Arecoline	Saline	Arecoline
	(n = 7)	(n = 6)	(n = 7)	(n = 6)	(n = 8)	(n = 6)
Frontal cortex (10)						
Layer I	17.26 ± 2.43	43.59 ± 4.67***	13.89 ± 2.10	26.92 ± 7.05***	13.62 ± 2.77	35.49 ± 8.23***
Layer IV	23.11 ± 2.15	56.32 ± 10.80***	16.59 ± 3.05	26.02 ± 8.51*	15.50 ± 4.49	30.47 ± 7.53***
Frontal cortex (8)						
Layer I	20.24 ± 5.02	49.42 ± 10.44***	16.68 ± 3.44	26.47 ± 7.99*	14.85 ± 4.03	26.37 ± 3.94**
Layer IV	25.38 ± 4.42	56.43 ± 14.09***	19.52 ± 5.08	31.01 ± 7.47*	16.18 ± 5.52	33.25 ± 6.98**
Pyriform cortex	13.32 ± 2.87	29.88 ± 6.53***	14.83 ± 3.59	16.40 ± 2.63	11.22 ± 1.85	19.48 ± 4.48**
Anterior cingulate cortex	24.53 ± 5.83	53.01 ± 7.23***	17.52 ± 3.42	25.33 ± 5.65*	16.18 ± 2.59	27.50 ± 6.13**
Motor cortex						
Layer I	17.10 ± 3.87	38.85 ± 7.91***	13.85 ± 2.86	21.21 ± 5.13*	12.19 ± 2.50	21.68 ± 2.33**
Layer II-III	18.79 ± 3.66	40.45 ± 8.95***	15.38 ± 2.27	20.63 ± 3.58	12.35 ± 1.68	25.73 ± 4.12***
Layer IV	23.87 ± 4.46	48.30 ± 6.71***	17.38 ± 3.80	26.14 ± 7.79	15.15 ± 1.82	28.89 ± 5.91*
Layer V	19.98 ± 3.76	41.87 ± 5.88***	13.64 ± 2.41	19.28 ± 4.11*	12.40 ± 1.24	22.18 ± 4.26***
Layer VI	18.48 ± 4.08	38.19 ± 6.83***	13.77 ± 2.17	19.75 ± 4.73*	11.29 ± 1.32	22.70 ± 4.04***
Somatosensory cortex						
Layer I	20.69 ± 6.07	42.60 ± 4.62***	13.95 ± 2.80	22.09 ± 3.47*	12.47 ± 1.69	24.15 ± 3.74***
Layer II-III	21.28 ± 5.16	45.63 ± 5.77***	16.33 ± 2.36	23.54 ± 4.83*	15.55 ± 2.86	27.34 ± 3.41***
Layer IV	27.81 ± 5.45	56.28 ± 8.22***	19.63 ± 3.83	27.27 ± 6.29*	18.66 ± 4.13	28.44 ± 3.95**
Layer V	25.58 ± 4.51	51.77 ± 5.19***	17.76 ± 2.84	24.84 ± 6.01*	16.84 ± 2.16	23.29 ± 4.47
Layer VI	23.20 ± 2.97	47.85 ± 6.62***	16.57 ± 2.47	24.21 ± 5.44*	14.26 ± 2.10	25.23 ± 6.72**
Auditory cortex						
Layer I	21.55 ± 3.99	41.05 ± 6.87***	14.26 ± 4.04	22.85 ± 5.16**	14.32 ± 2.41	20.06 ± 4.79
Layer IV	25.83 ± 4.16	45.68 ± 7.94***	14.29 ± 3.47	23.23 ± 4.72**	16.79 ± 2.48	21.50 ± 4.22
Visual cortex						
Layer I	21.52 ± 2.44	42.42 ± 7.26***	13.69 ± 4.21	24.62 ± 4.97***	14.21 ± 2.48	21.55 ± 3.83*
Layer IV	21.52 ± 2.70	49.95 ± 7.92***	15.58 ± 5.00	29.33 ± 3.56***	15.13 ± 3.15	23.94 ± 4.19
Layer VI	23.25 ± 2.11	42.19 ± 5.80***	12.36 ± 2.60	27.56 ± 3.62***	13.58 ± 2.62	21.37 ± 3.48***
Preoptic area (LPO/MPO)	16.01 ± 4.19	29.25 ± 3.46***	13.36 ± 2.59	15.58 ± 2.32	12.32 ± 3.90	16.93 ± 3.50
Olfactory tubercle	17.35 ± 2.68	45.28 ± 8.80***	15.70 ± 2.79	21.55 ± 5.96	15.37 ± 5.04	25.84 ± 6.64**
Diagonal band ventral	22.42 ± 2.66	45.49 ± 9.71***	15.49 ± 5.01	23.52 ± 8.01	15.23 ± 3.38	18.99 ± 7.65
Hippocampus						
Dentate gyrus	21.94 ± 2.09	39.16 ± 5.61***	16.01 ± 5.91	20.62 ± 4.15	12.65 ± 2.21	21.55 ± 3.46**
SLM	28.44 ± 2.14	55.89 ± 10.30***	17.13 ± 4.29	29.18 ± 5.07**	16.11 ± 2.39	28.24 ± 1.87**
Caudate putamen						
Ventral	19.88 ± 3.80	41.69 ± 7.92***	13.59 ± 1.54	23.51 ± 7.00**	13.40 ± 2.33	23.65 ± 5.18***
Lateral	19.45 ± 3.57	43.43 ± 8.07***	13.94 ± 2.24	23.92 ± 6.57**	13.96 ± 2.59	22.35 ± 4.05**
Medial	18.90 ± 3.90	40.91 ± 9.06***	14.49 ± 2.16	22.96 ± 7.14*	15.46 ± 2.46	24.04 ± 5.38*
Lateral geniculate nu	32.73 ± 3.36	62.51 ± 10.24***	21.58 ± 4.13	37.16 ± 7.37**	19.52 ± 3.51	35.21 ± 9.86**
Thalamus						
Ventroposterior lateral nu	28.88 ± 4.15	57.47 ± 9.48***	23.45 ± 5.28	29.75 ± 6.26	17.64 ± 4.40	32.36 ± 8.89***
Paratenial nu	22.68 ± 5.37	42.71 ± 7.63***	19.26 ± 2.55	24.25 ± 9.00	15.68 ± 3.29	27.59 ± 4.61**

Anteroventral nu	38.27 ± 9.31	74.67 ± 11.29***	26.24 ± 5.36	36.71 ± 10.30	24.70 ± 3.76	37.03 ± 7.08*
Anteromedial nu	25.86 ± 5.52	51.43 ± 8.39***	20.49 ± 3.97	26.37 ± 7.68	17.43 ± 3.46	35.35 ± 8.16***
Reticular nu	28.78 ± 5.54	53.21 ± 8.81***	19.68 ± 2.61	28.50 ± 6.11	17.56 ± 2.85	33.54 ± 8.17***
Subthalamic nu	30.42 ± 3.72	70.68 ± 11.19***	22.24 ± 3.45	28.39 ± 8.70	21.99 ± 5.11	26.72 ± 8.93
Hypothalamus						
Supraoptic nu	16.65 ± 3.05	34.50 ± 4.42***	13.26 ± 1.38	17.27 ± 4.17	13.52 ± 4.62	17.82 ± 1.91
Posterior	25.27 ± 4.77	46.65 ± 8.50***	15.76 ± 4.08	22.96 ± 5.91	15.25 ± 3.47	24.84 ± 3.57**
Interpeduncular nu	39.44 ± 5.13	77.35 ± 9.91***	27.20 ± 6.92	36.91 ± 8.63	25.77 ± 3.54	37.41 ± 10.28
Pretectal area	27.51 ± 4.22	59.79 ± 6.65***	16.05 ± 3.86	26.97 ± 5.79**	16.30 ± 3.35	30.45 ± 4.30***
Grey layer sup colliculus	24.72 ± 3.33	49.41 ± 6.45***	15.68 ± 2.87	26.67 ± 7.10**	15.90 ± 2.04	26.81 ± 3.23***
Superior colliculus	24.80 ± 2.47	51.92 ± 11.22***	21.09 ± 6.30	28.69 ± 6.71	15.82 ± 2.80	30.00 ± 5.34***
Inferior colliculus	43.06 ± 9.39	82.49 ± 13.77***	26.60 ± 4.82	44.20 ± 8.36**	26.15 ± 6.91	38.30 ± 5.82**
Flocculus	30.51 ± 5.40	57.19 ± 7.23***	20.05 ± 4.49	33.69 ± 4.76**	19.33 ± 4.60	29.28 ± 9.72*
Molecular layer cerebellar gray matter						
	33.28 ± 9.21	75.97 ± 5.55***	25.69 ± 2.86	38.64 ± 6.09**	24.31 ± 4.84	37.70 ± 8.05*
Non-blood-brain barrier regions						
Subformical organ	20.66 ± 5.47	51.42 ± 12.90***	14.22 ± 2.92	21.35 ± 6.14	15.42 ± 3.12	23.18 ± 5.19

Data are mean ± SD. $k^* = (\text{ml/s/g}) \times 10^{-4}$

Abbreviations: nu, nucleus; SLM, stratum lacunosum-moleculae of hippocampus. Mice were given methylatropine (4 mg/kg, sc) or saline 17 min before administration of saline or arecoline (30 mg/kg ip). [^{14}C]DHA infusion was started 3 min after arecoline administration. In cases of statistically significant genotype x arecoline interactions, main effects are not reported, and Bonferroni post-tests were performed. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; iPLA $_2\beta^{+/+}$ plus arecoline vs. iPLA $_2\beta^{+/+}$ saline; iPLA $_2\beta^{+/-}$ plus arecoline vs. iPLA $_2\beta^{+/-}$ saline, iPLA $_2\beta^{-/-}$ plus arecoline vs. iPLA $_2\beta^{-/-}$ saline.