**Supplemental Table 1.** Median (IQR) of α- and γ-tocopherol concentrations in frontal cortex, temporal cortex, occipital cortex, and averages of three brain regions (n = 43).

|  |  |  |
| --- | --- | --- |
| **Brain region** | **α-Tocopherol (pmol/g)** | **γ-Tocopherol (pmol/g)** |
| Frontal cortex Temporal cortexOccipital cortexAverage of three regions  | 65,855 (58,812-74,645)66,753 (55,907-76,093)72,049 (60,466-83,467)69,063 (60,627-77,399) | 1,398 (1,092-1,987)1,578 (1,211-2,169)1,519 (1,167-2,125)1,441 (1,215-2,064) |

**Supplemental Table 2.** Pearson’s correlation coefficients (r) and p values of α- and γ-tocopherol concentrations (log transformed) among three brain regions (n = 43).

|  |  |  |
| --- | --- | --- |
| **Brain region** | **Frontal cortex** | **Temporal cortex** |
|  | α-tocopherol | γ-tocopherol | α-tocopherol | γ-tocopherol |
| Temporal cortexOccipital cortex | r = 0.43 p = 0.004r = 0.58 p < 0.001 | r = 0.89p < 0.001r = 0.88p < 0.001 | r = 0.51p < 0.001 | r = 0.84p < 0.001 |

**Supplemental Table 3.** β coefficients and p values demonstratingno associations were observed between global α- or γ-tocopherol concentrations (averaged from frontal, temporal, and occipital cortices) and neuritic plaque (NP) or neurofibrillary tangle (NFT) counts in 8 brain regions (n = 43, no adjustment for covariates). Tocopherol concentrations and NP or NFT counts were log transformed before model fitting.

|  |  |  |  |
| --- | --- | --- | --- |
| **Brain region** | **α-Tocopherol & NP counts** | **γ-Tocopherol & NFT counts** | **γ-Tocopherol & NP counts** |
| **β coefficient(SE)** | **p value** | **β coefficient(SE)** | **p value** | **β coefficient(SE)** | **p value** |
| Frontal cortexTemporal cortexParietal cortexAmygdalaEntorhinal cortexHippocampusSubiculum | -1.03 (0.84)-0.71 (0.84)-0.19 (0.88)-1.22 (0.71)-0.43 (0.36)-0.14 (0.41)-0.68 (0.44) | 0.2250.4040.8340.0930.2400.7340.130 | -0.16 (0.30)-0.42 (0.34)-0.02 (0.32)-0.53 (0.46)-0.40 (0.41)-0.04 (0.39)-0.13 (0.46) | 0.5970.2220.9550.2590.3240.9230.777 | 0.13 (0.38)-0.24 (0.38)-0.07 (0.39)-0.06 (0.33)-0.31 (0.16)-0.21 (0.18)-0.27 (0.20) | 0.7320.5250.8590.8460.0530.2540.181 |

**Supplemental Table 4.** Characteristics of subjects from the Georgia Centenarian Study by Braak stages. Medians that do not share superscription are significantly different with post-hoc comparisons (FDR-adjusted p<0.05).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Characteristics** | **Braak I-II****n = 15** | **Braak III-IV****n = 13** | **Braak V-VI****n = 13** | **p value \*** |
| Age in years, mean (SD)Sex, n (%) Male FemaleRace, n (%) Caucasian BlackBMI in kg/m2, mean (SD)Hypertension, n (%)Diabetes, n (%)Education, n (%) < High school High school> High school No dataLiving, n (%) Community dwelling InstitutionalizedAnti-inflammatory medicationsSmoking, n (%) Never Past Present No dataAlcohol use, n (%) Never Past Present No data*APOE* ε4 allele carrier, n (%)Mini-Mental State Examination, mean (SD)NIARI criteria for AD diagnosis, n (%) No likelihood Low likelihood Intermediate likelihood High likelihood | 101.4 (2.6) 3 (20%) 12 (80%)14 (93%)1 (7%)23.2 (3.8)8 (53%)1 (7%)7 (47%)3 (20%)5 (33%)05 (33%)10 (67%)2 (13%)8 (80%)1 (10%)1 (10%)56 (60%)3 (30%)1 (10%)51 (7%)22.5 (6.2)a5 (33%)10 (67%)0 (0%)0 (0%) | 102.9 (1.7)0 (0%)13 (100%)13 (100%)0 (0%)21.8 (4.3)7 (54%)2 (15%)6 (46%)4 (31%)3 (23%)03 (23%)10 (77%)2 (15%)10 (91%)1 (9%)0 (0%)25 (45%)2 (18%)4 (36%)23 (23%)17.4 (8.9)a,b0 (0%)3 (23%)10 (77%)0 (0%) | 102.5 (2.6)2 (15%)11 (85%)11 (85%)2 (15%)20.5 (3.7)7 (54%)0 (0%)7 (58%)3 (25%)2 (17%)15 (38%)8 (62%)0 (0%)9 (90%)1 (10%)0 (0%)38 (80%)0 (0%)2 (20%)33 (23%)11.7 (8.0)b1 (8%)0 (0%)0 (0%)12 (92%) | 0.2510.3430.5060.21410.5060.9210.7700.5240.9130.2850.3950.003<0.001 |

\*Kruskal-Wallis test for continuous variables and Fisher exact test for count variables.

**Supplemental Table 5.** β coefficients and p values demonstratingassociations between global α- or **γ**-tocopherol concentration (averaged from frontal, temporal, and occipital cortices) as an independent variable and Braak stages (I-VI) as a dependent variable in a linear regression model (n = 41). Tocopherol concentrations were log transformed before model fitting.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **α-Tocopherol tertiles** | **As linear term** | **γ-Tocopherol tertiles** | **As linear term** |
| **1** | **2** | **3** | **1** | **2** | **3** |
| Concentration, median (IQR) in pmol/g | 56531(52781-60309) | 68992(67799-71148) | 82004(77399-84219) | 1067(908-1158) | 1417(1337-1551) | 2272(2064-2747) |
| **Model I** a β (SE) p value**Model II** a β (SE) p value | 1.00 (ref)1.00 (ref) | -0.21 (0.56)0.704-0.21 (0.70)0.762 | -0.57 (0.57)0.328-0.67 (0.69)0.339 | -1.65 (1.17)0.166-2.43 (1.43)0.100 | 1.00 (ref)1.00 (ref) | -0.34 (0.58)0.558-0.03 (0.72)0.962 | -0.21 (0.57)0.7070.11 (0.68)0.872 | -0.57 (0.51)0.278-0.44 (0.58)0.453 |

a Model I: no adjustment for covariate; Model II: adjustment for sex, race, education, presence of *APOE* ε4 allele, diabetes, and hypertension