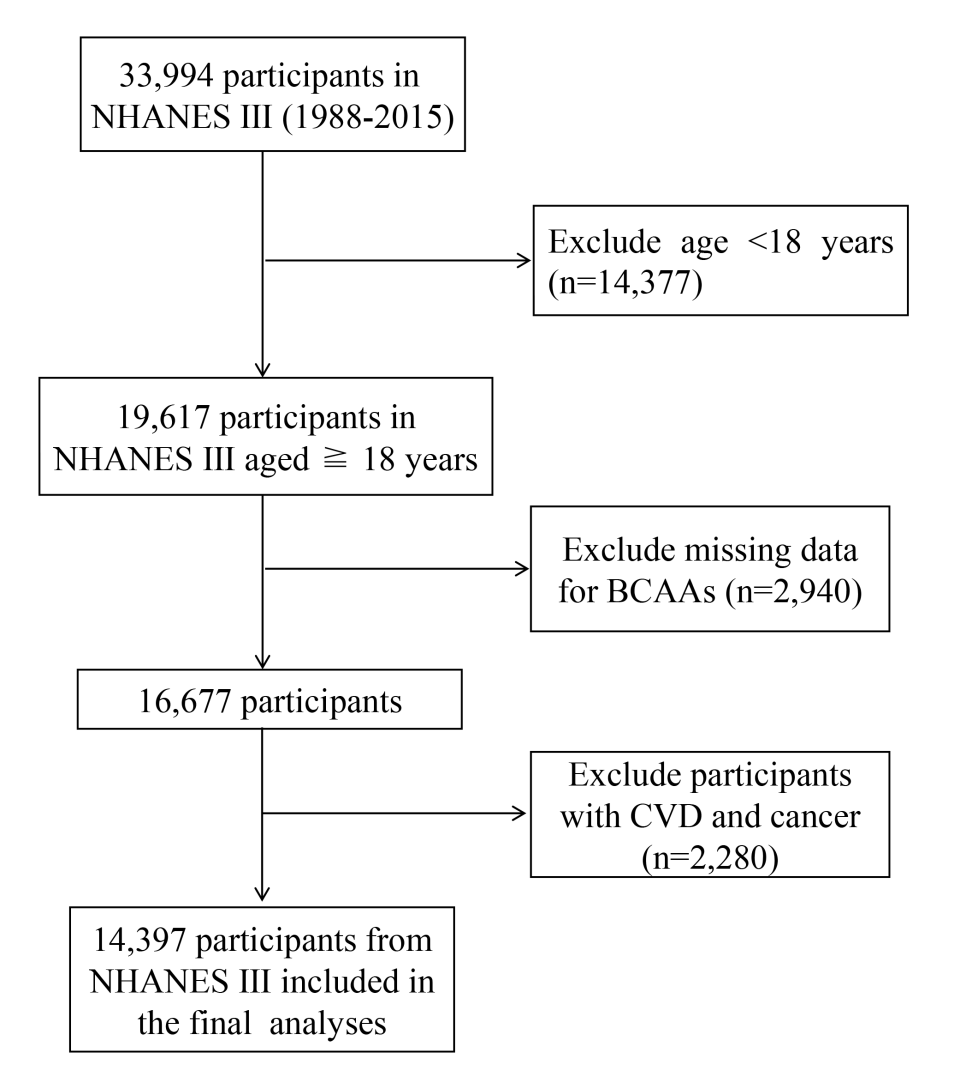
Supplementary Figure 1. Flowchart of Study Participants



Supplementary Table 1. Subgroup Analyses of the Association between BCAAs and All-Cause Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | BCAAs | | | | | | Each SD | P-Interaction |
|  | Q1(<7.8) | Q2(7.8–10.9) | Q3(10.9–14.1) | Q4(14.1–19) | Q5(≥19) | P-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 0.89(0.60-1.34) | 0.83(0.54-1.26) | 0.81(0.49-1.35) | 0.89(0.44-1.79) | 0.548 | 0.88(0.72-1.07) | 0.691 |
| ≥60 year | 1.00 | 0.68(0.53-0.87) | 0.81(0.61-1.08) | 0.54(0.40-0.73) | 0.46(0.31-0.67) | 0.002 | 0.83(0.71-0.97) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.72(0.52-1.01) | 0.64(0.46-0.90) | 0.58(0.42-0.82) | 0.57(0.31-1.06) | 0.019 | 0.77(0.66-0.91) | 0.198 |
| Women | 1.00 | 0.70(0.54-0.91) | 0.70(0.50-1.00) | 0.51(0.31-0.84) | 0.59(0.27-1.30) | 0.020 | 0.74(0.60-0.92) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 0.79(0.53-1.18) | 1.07(0.69-1.67) | 0.89(0.56-1.41) | 1.03(0.56-1.91) | 0.828 | 0.95(0.75-1.21) | 0.096 |
| ≥25 kg/m2 | 1.00 | 0.75(0.56-1.01) | 0.63(0.45-0.87) | 0.50(0.36-0.71) | 0.48(0.28-0.83) | 0.001 | 0.74(0.63-0.87) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.64-1.55) | 1.00(0.63-1.58) | 1.00(0.55-1.81) | 1.00(0.48-2.07) | 1.000 | 1.00(0.79-1.27) | 0.444 |
| ≥200 mg/dL | 1.00 | 0.77(0.58-1.03) | 0.67(0.49-0.92) | 0.56(0.43-0.72) | 0.57(0.33-1.00) | 0.001 | 0.77(0.66-0.90) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.91(0.69-1.19) | 0.99(0.77-1.27) | 0.88(0.62-1.26) | 0.91(0.53-1.55) | 0.656 | 0.90(0.75-1.08) | 0.008 |
| ≥150 mg/dL | 1.00 | 0.59(0.44-0.80) | 0.50(0.32-0.78) | 0.38(0.25-0.58) | 0.43(0.22-0.84) | <0.001 | 0.69(0.57-0.83) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 0.69(0.49-0.96) | 0.61(0.41-0.92) | 0.44(0.25-0.75) | 0.70(0.34-1.43) | 0.024 | 0.71(0.57-0.87) | 0.909 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.84(0.64-1.10) | 0.94(0.70-1.26) | 0.87(0.60-1.28) | 0.74(0.40-1.38) | 0.595 | 0.93(0.77-1.11) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.75(0.56-0.99) | 0.88(0.65-1.19) | 0.70(0.48-1.04) | 0.92(0.55-1.54) | 0.385 | 0.84(0.70-1.00) | 0.271 |
| Yes | 1.00 | 0.75(0.57-0.99) | 0.64(0.48-0.87) | 0.52(0.37-0.75) | 0.46(0.27-0.77) | 0.001 | 0.76(0.65-0.90) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.87(0.44-1.73) | 0.80(0.41-1.57) | 0.70(0.30-1.67) | 1.09(0.32-3.69) | 0.636 | 0.68(0.50-0.92) | 0.576 |
| No | 1.00 | 0.76(0.62-0.95) | 0.78(0.63-0.97) | 0.64(0.48-0.85) | 0.64(0.41-0.98) | 0.014 | 0.82(0.72-0.94) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 2. Subgroup Analyses of the Association between BCAAs and CVD Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | BCAAs | | | | | | Each SD | *P*-Interaction |
|  | Q1(<7.8) | Q2(7.8-10.9) | Q3(10.9-14.1) | Q4(14.1-19) | Q5(≥19) | *P* -trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 0.61(0.25-1.50) | 0.71(0.21-2.41) | 0.59(0.21-1.63) | 0.58(0.18-1.89) | 0.349 | 0.97(0.68-1.38) | 0.023 |
| ≥60 year | 1.00 | 0.90(0.51-1.60) | 0.82(0.41-1.64) | 0.79(0.37-1.68) | 0.82(0.29-2.35) | 0.509 | 0.95(0.69-1.31) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.52(0.17-1.56) | 0.58(0.27-1.23) | 0.40(0.24-0.67) | 0.53(0.24-1.20) | 0.021 | 0.86(0.71-1.04) | 0.270 |
| Women | 1.00 | 0.84(0.47-1.49) | 0.82(0.31-2.20) | 1.05(0.24-4.60) | 0.75(0.12-4.54) | 0.930 | 0.92(0.66-1.29) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 0.61(0.36-1.02) | 0.62(0.38-1.02) | 0.63(0.27-1.44) | 0.30(0.10-0.88) | 0.214 | 0.89(0.58-1.37) | 0.081 |
| ≥25 kg/m2 | 1.00 | 0.71(0.38-1.32) | 0.70(0.34-1.46) | 0.61(0.31-1.17) | 0.94(0.30-2.97) | 0.284 | 0.88(0.72-1.07) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 0.21(0.11-0.42) | 0.31(0.11-0.86) | 0.53(0.19-1.45) | 0.32(0.10-1.03) | 0.292 | 0.60(0.33-1.06) | 0.960 |
| ≥200 mg/dL | 1.00 | 1.06(0.60-1.88) | 0.71(0.40-1.26) | 0.66(0.34-1.30) | 0.70(0.30-1.62) | 0.157 | 0.91(0.77-1.07) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.62(0.36-1.05) | 0.90(0.54-1.51) | 0.74(0.41-1.32) | 0.70(0.36-1.37) | 0.423 | 0.86(0.68-1.09) | 0.414 |
| ≥150 mg/dL | 1.00 | 1.00(0.38-2.63) | 0.56(0.15-2.10) | 0.64(0.19-2.19) | 0.94(0.09-10.05) | 0.212 | 0.88(0.69-1.12) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 0.64(0.28-1.50) | 0.80(0.48-1.34) | 0.71(0.31-1.65) | 2.51(0.64-9.88) | 0.636 | 0.76(0.56-1.04) | 0.175 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.84(0.49-1.47) | 0.69(0.36-1.35) | 0.76(0.39-1.49) | 0.66(0.33-1.34) | 0.367 | 0.93(0.72-1.19) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.65(0.25-1.67) | 1.09(0.56-2.11) | 1.01(0.46-2.22) | 0.78(0.31-1.98) | 0.849 | 0.91(0.56-1.50) | 0.063 |
| Yes | 1.00 | 0.92(0.49-1.70) | 0.53(0.29-0.95) | 0.64(0.37-1.10) | 0.58(0.21-1.60) | 0.016 | 0.90(0.71-1.13) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.26(0.06-1.06) | 2.93(0.45-19.24) | 1.01(0.05-20.82) | 0.59(0.01-51.68) | 0.987 | 0.87(0.28-2.63) | 0.065 |
| No | 1.00 | 0.73(0.49-1.10) | 0.55(0.35-0.87) | 0.64(0.39-1.03) | 0.61(0.29-1.26) | 0.065 | 0.84(0.71-0.99) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 3. Subgroup Analyses of the Association between BCAAs and Cancer Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | BCAAs | | | | | | Each SD | *P*-Interaction |
|  | Q1(<7.8) | Q2(7.8-10.9) | Q3(10.9-14.1) | Q4(14.1-19) | Q5(≥19) | *P* -trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 1.18(0.61-2.29) | 0.76(0.30-1.93) | 0.69(0.31-1.53) | 0.56(0.14-2.22) | 0.262 | 0.87(0.54-1.41) | 0.011 |
| ≥60 year | 1.00 | 0.69(0.36-1.32) | 0.75(0.42-1.34) | 0.42(0.13-1.35) | 0.75(0.22-2.64) | 0.190 | 0.81(0.46-1.42) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.48(0.19-1.20) | 0.54(0.29-0.99) | 0.52(0.25-1.07) | 0.58(0.19-1.79) | 0.540 | 0.62(0.32-1.21) | 0.111 |
| Women | 1.00 | 1.34(0.69-2.61) | 1.85(1.05-3.26) | 1.59(0.39-6.43) | 4.81(1.03-22.51) | 0.073 | 1.39(0.99-1.95) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 0.84(0.38-1.84) | 1.43(0.56-3.61) | 1.07(0.41-2.81) | 0.99(0.23-4.30) | 0.820 | 1.08(0.71-1.65) | 0.433 |
| ≥25 kg/m2 | 1.00 | 0.59(0.27-1.31) | 0.58(0.35-0.98) | 0.35(0.15-0.80) | 0.67(0.21-2.18) | 0.043 | 0.61(0.41-0.91) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 0.31(0.13-0.75) | 0.62(0.30-1.26) | 0.37(0.15-0.90) | 0.42(0.09-1.90) | 0.343 | 1.12(0.76-1.67) | 0.423 |
| ≥200 mg/dL | 1.00 | 0.97(0.54-1.76) | 0.83(0.46-1.50) | 0.49(0.22-1.08) | 0.88(0.31-2.48) | 0.183 | 0.73(0.44-1.23) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.65(0.37-1.15) | 0.71(0.37-1.34) | 0.39(0.18-0.87) | 0.62(0.23-1.71) | 0.114 | 0.83(0.54-1.28) | 0.231 |
| ≥150 mg/dL | 1.00 | 1.27(0.48-3.40) | 0.98(0.34-2.86) | 0.80(0.26-2.52) | 0.96(0.24-3.81) | 0.595 | 0.89(0.44-1.80) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 0.83(0.44-1.55) | 1.34(0.75-2.42) | 0.61(0.29-1.25) | 1.14(0.39-3.36) | 0.597 | 1.01(0.75-1.34) | 0.888 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.52(0.25-1.08) | 0.57(0.27-1.19) | 0.44(0.18-1.10) | 0.75(0.21-2.73) | 0.356 | 0.57(0.31-1.04) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.87(0.48-1.58) | 0.82(0.34-1.98) | 0.50(0.17-1.48) | 0.80(0.20-3.16) | 0.557 | 0.94(0.48-1.85) | 0.531 |
| Yes | 1.00 | 0.65(0.35-1.23) | 0.95(0.54-1.68) | 0.94(0.41-2.20) | 1.58(0.48-5.25) | 0.841 | 0.93(0.55-1.57) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | - | - | - | - | 0.127 | 1.30(0.37-4.54) | 0.853 |
| No | 1.00 | 0.62(0.35-1.07) | 0.82(0.48-1.41) | 0.53(0.27-1.04) | 0.75(0.31-1.82) | 0.307 | 0.83(0.55-1.26) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 4. Subgroup Analyses of the Association between lsoleucine and All-Cause Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | lsoleucine | | | | | | Each SD | *P*-Interaction |
|  | Q1(<2.0) | Q2(2.0-2.8) | Q3(2.8-3.7) | Q4(3.7-5.0) | Q5(≥5.0) | *P*-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 0.90(0.59-1.38) | 0.78(0.51-1.19) | 0.73(0.45-1.18) | 0.82(0.41-1.65) | 0.282 | 0.86(0.70-1.06) | 0.506 |
| ≥60 year | 1.00 | 0.70(0.53-0.92) | 0.81(0.64-1.03) | 0.55(0.41-0.73) | 0.48(0.30-0.76) | 0.001 | 0.80(0.68-0.95) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.81(0.56-1.18) | 0.64(0.45-0.91) | 0.56(0.38-0.82) | 0.56(0.29-1.10) | 0.008 | 0.76(0.63-0.91) | 0.152 |
| Women | 1.00 | 0.70(0.54-0.91) | 0.69(0.49-0.97) | 0.51(0.32-0.82) | 0.59(0.26-1.31) | 0.012 | 0.71(0.57-0.88) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 0.85(0.59-1.23) | 0.99(0.61-1.62) | 0.86(0.53-1.39) | 1.03(0.56-1.89) | 0.852 | 0.90(0.69-1.18) | 0.100 |
| ≥25 kg/m2 | 1.00 | 0.77(0.55-1.09) | 0.63(0.45-0.89) | 0.48(0.34-0.67) | 0.47(0.26-0.84) | 0.000 | 0.73(0.63-0.86) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.64-1.57) | 1.00(0.63-1.58) | 1.00(0.56-1.79) | 1.00(0.48-2.08) | 1.00 | 1.00(0.79-1.27) | 0.597 |
| ≥200 mg/dL | 1.00 | 0.81(0.59-1.13) | 0.68(0.51-0.92) | 0.57(0.44-0.74) | 0.64(0.36-1.15) | 0.001 | 0.76(0.65-0.88) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.92(0.69-1.23) | 0.92(0.72-1.17) | 0.82(0.59-1.13) | 0.82(0.48-1.39) | 0.294 | 0.86(0.71-1.04) | 0.018 |
| ≥150 mg/dL | 1.00 | 0.63(0.46-0.87) | 0.53(0.34-0.82) | 0.38(0.25-0.57) | 0.51(0.25-1.05) | 0.001 | 0.70(0.58-0.83) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 0.74(0.52-1.05) | 0.64(0.43-0.94) | 0.43(0.25-0.74) | 0.68(0.36-1.30) | 0.014 | 0.69(0.57-0.84) | 0.819 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.85(0.64-1.11) | 0.89(0.66-1.18) | 0.83(0.57-1.22) | 0.74(0.38-1.46) | 0.432 | 0.90(0.74-1.10) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.71(0.53-0.96) | 0.80(0.60-1.07) | 0.63(0.45-0.90) | 0.84(0.51-1.39) | 0.156 | 0.80(0.67-0.95) | 0.200 |
| Yes | 1.00 | 0.85(0.63-1.14) | 0.66(0.49-0.89) | 0.56(0.40-0.80) | 0.52(0.30-0.90) | 0.001 | 0.77(0.65-0.91) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 1.00(0.53-1.90) | 0.99(0.41-2.36) | 0.82(0.28-2.39) | 1.83(0.31-10.88) | 0.914 | 0.67(0.50-0.90) | 0.565 |
| No | 1.00 | 0.78(0.61-0.99) | 0.75(0.61-0.93) | 0.62(0.47-0.80) | 0.61(0.40-0.93) | 0.004 | 0.80(0.71-0.92) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 5. Subgroup Analyses of the Association between lsoleucine and CVD Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | lsoleucine | | | | | | Each SD | *P*-Interaction |
|  | Q1（<2.0） | Q2(2.0-2.8) | Q3（2.8-3.7） | Q4（3.7-5.0） | Q5（≥5.0） | *P*-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 1.09(0.37-3.26) | 0.47(0.10-2.20) | 0.54(0.12-2.54) | 0.60(0.08-4.24) | 0.324 | 1.22(0.64-2.31) | 0.456 |
| ≥60 year | 1.00 | 0.57(0.28-1.15) | 0.99(0.65-1.51) | 0.58(0.34-0.97) | 0.71(0.28-1.76) | 0.366 | 0.88(0.67-1.17) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.67(0.25-1.79) | 0.39(0.16-0.94) | 0.34(0.16-0.74) | 0.51(0.16-1.67) | 0.015 | 0.64(0.44-0.92) | 0.392 |
| Women | 1.00 | 1.00(0.54-1.87) | 1.00(0.44-2.27) | 1.00(0.40-2.52) | 1.00(0.27-3.76) | 1.000 | 1.00(0.72-1.39) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 1.00(0.28-3.63) | 1.00(0.29-3.44) | 1.00(0.24-4.19) | 1.00(0.19-5.16) | 1.000 | 1.00(0.55-1.83) | 1.000 |
| ≥25 kg/m2 | 1.00 | 0.93(0.38-2.27) | 0.79(0.44-1.42) | 0.52(0.24-1.13) | 0.63(0.20-1.99) | 0.168 | 0.92(0.68-1.24) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.16-6.43) | 1.00(0.22-4.62) | 1.00(0.20-4.94) | 1.00(0.24-4.24) | 1.000 | 1.00(0.59-1.70) | 1.000 |
| ≥200 mg/dL | 1.00 | 0.82(0.39-1.71) | 0.95(0.57-1.58) | 0.85(0.43-1.68) | 1.07(0.35-3.27) | 0.850 | 0.97(0.70-1.35) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.80(0.37-1.74) | 1.09(0.62-1.91) | 0.72(0.36-1.45) | 1.08(0.38-3.09) | 0.754 | 1.16(0.80-1.68) | 1.000 |
| ≥150 mg/dL | 1.00 | 0.64(0.27-1.53) | 0.46(0.20-1.06) | 0.36(0.14-0.98) | 0.36(0.10-1.26) | 0.040 | 0.67(0.48-0.92) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 1.00(0.27-3.73) | 1.00(0.34-2.93) | 1.00(0.39-2.58) | 1.00(0.29-3.41) | 1.000 | 1.00(0.64-1.55) | 1.000 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.83(0.40-1.69) | 0.94(0.52-1.69) | 0.79(0.37-1.67) | 1.10(0.34-3.56) | 0.725 | 0.99(0.68-1.45) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.91(0.36-2.33) | 0.68(0.25-1.87) | 0.59(0.19-1.90) | 0.63(0.15-2.62) | 0.338 | 0.90(0.59-1.37) | 0.533 |
| Yes | 1.00 | 0.62(0.27-1.39) | 0.72(0.43-1.21) | 0.52(0.27-1.01) | 0.74(0.26-2.13) | 0.119 | 0.91(0.59-1.42) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.70(0.15-3.30) | 1.36(0.14-13.19) | 1.87(0.12-28.95) | 2.65(0.10-72.08) | 0.553 | 0.79(0.20-3.14) | 0.286 |
| No | 1.00 | 1.00(0.37-2.73) | 1.00(0.48-2.08) | 1.00(0.49-2.04) | 1.00(0.47-2.13) | 1.000 | 1.00(0.72-1.39) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 6. Subgroup Analyses of the Association between lsoleucine and Cancer Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | lsoleucine | | | | | | Each SD | *P*-Interaction |
|  | Q1（＜2.0） | Q2（2.0-2.8） | Q3（2.8-3.7） | Q4（3.7-5.0） | Q5（≥5.0） | *P*-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 0.60(0.32-1.13) | 0.85(0.41-1.78) | 0.76(0.35-1.63) | 0.65(0.16-2.69) | 0.717 | 0.86(0.59-1.26) | 0.807 |
| ≥60 year | 1.00 | 0.59(0.36-0.98) | 0.71(0.38-1.31) | 0.37(0.16-0.89) | 0.31(0.09-1.04) | 0.036 | 0.61(0.44-0.85) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.83(0.40-1.70) | 0.81(0.36-1.83) | 0.69(0.32-1.46) | 0.41(0.10-1.66) | 0.225 | 0.77(0.48-1.22) | 0.827 |
| Women | 1.00 | 0.64(0.38-1.08) | 0.90(0.40-2.01) | 0.62(0.20-1.96) | 1.30(0.20-8.31) | 0.604 | 0.70(0.42-1.16) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 0.83(0.44-1.56) | 1.33(0.62-2.86) | 0.98(0.40-2.41) | 1.64(0.42-6.39) | 0.554 | 1.01(0.60-1.68) | 0.305 |
| ≥25 kg/m2 | 1.00 | 0.50(0.30-0.83) | 0.51(0.29-0.90) | 0.33(0.17-0.63) | 0.19(0.07-0.51) | 0.001 | 0.59(0.45-0.77) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.42-2.39) | 1.00(0.35-2.88) | 1.00(0.38-2.66) | 1.00(0.23-4.31) | 1.000 | 1.00(0.59-1.69) | 0.999 |
| ≥200 mg/dL | 1.00 | 0.58(0.36-0.91) | 0.62(0.33-1.16) | 0.39(0.20-0.75) | 0.35(0.12-1.01) | 0.025 | 0.63(0.46-0.87) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.64(0.41-0.99) | 0.77(0.40-1.49) | 0.68(0.34-1.33) | 0.55(0.14-2.13) | 0.446 | 0.73(0.51-1.05) | 0.976 |
| ≥150 mg/dL | 1.00 | 0.50(0.23-1.10) | 0.62(0.29-1.34) | 0.29(0.13-0.69) | 0.44(0.12-1.61) | 0.044 | 0.65(0.46-0.91) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 0.53(0.26-1.08) | 0.61(0.28-1.32) | 0.22(0.09-0.58) | 0.57(0.16-1.99) | 0.045 | 0.58(0.41-0.81) | 0.802 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.68(0.37-1.28) | 0.97(0.41-2.28) | 1.04(0.46-2.34) | 0.63(0.15-2.74) | 0.762 | 0.99(0.62-1.56) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.58(0.35-0.97) | 0.89(0.50-1.58) | 0.67(0.31-1.47) | 0.93(0.26-3.29) | 0.769 | 0.80(0.53-1.21) | 0.938 |
| Yes | 1.00 | 0.63(0.35-1.16) | 0.52(0.23-1.21) | 0.38(0.16-0.94) | 0.19(0.04-0.88) | 0.022 | 0.61(0.42-0.87) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.70(0.14-3.47) | 1.82(0.38-8.70) | 0.27(0.05-1.56) | 0.38(0.03-4.50) | 0.272 | 0.94(0.46-1.91) | 0.989 |
| No | 1.00 | 0.62(0.42-0.90) | 0.68(0.41-1.14) | 0.57(0.32-1.00) | 0.52(0.21-1.27) | 0.129 | 0.72(0.54-0.95) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 7. Subgroup Analyses of the Association between Leucine and All-Cause Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Leucine | | | | | | Each SD | *P*-Interaction |
|  | Q1（＜3.5） | Q2（3.5-4.9） | Q3（4.9-6.3） | Q4（6.3-8.5） | Q5（≥8.5） | *P*-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 0.96(0.62-1.48) | 0.84(0.59-1.21) | 0.96(0.57-1.60) | 1.05(0.48-2.30) | 0.933 | 0.89(0.72-1.10) | 0.871 |
| ≥60 year | 1.00 | 0.70(0.55-0.89) | 0.81(0.61-1.07) | 0.57(0.42-0.77) | 0.49(0.34-0.72) | 0.003 | 0.83(0.72-0.97) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.73(0.52-1.02) | 0.64(0.46-0.90) | 0.64(0.46-0.91) | 0.61(0.33-1.13) | 0.071 | 0.79(0.67-0.94) | 0.178 |
| Women | 1.00 | 0.76(0.55-1.03) | 0.82(0.60-1.12) | 0.63(0.40-0.98) | 0.81(0.37-1.77) | 0.106 | 0.76(0.61-0.94) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 0.96(0.65-1.43) | 1.19(0.83-1.71) | 1.07(0.73-1.56) | 1.48(0.79-2.80) | 0.251 | 0.98(0.78-1.24) | 0.068 |
| ≥25 kg/m2 | 1.00 | 0.72(0.54-0.97) | 0.63(0.45-0.89) | 0.55(0.39-0.77) | 0.50(0.29-0.86) | 0.002 | 0.75(0.63-0.88) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.60-1.66) | 1.00(0.66-1.52) | 1.00(0.60-1.68) | 1.00(0.46-2.15) | 1.00 | 1.00(0.80-1.26) | 0.280 |
| ≥200 mg/dL | 1.00 | 0.76(0.57-1.00) | 0.64(0.48-0.86) | 0.59(0.45-0.76) | 0.55(0.33-0.91) | 0.001 | 0.78(0.67-0.92) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.91(0.71-1.17) | 0.98(0.76-1.27) | 0.93(0.65-1.31) | 0.93(0.52-1.65) | 0.827 | 0.92(0.76-1.10) | 0.014 |
| ≥150 mg/dL | 1.00 | 0.66(0.45-0.97) | 0.55(0.35-0.88) | 0.46(0.29-0.74) | 0.55(0.27-1.13) | 0.005 | 0.69(0.57-0.84) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 0.75(0.54-1.04) | 0.75(0.51-1.10) | 0.50(0.30-0.83) | 0.92(0.43-1.9) | 0.088 | 0.72(0.58-0.89) | 0.689 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.83(0.63-1.08) | 0.89(0.65-1.20) | 0.94(0.65-1.36) | 0.73(0.40-1.34) | 0.773 | 0.95(0.79-1.13) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.82(0.60-1.12) | 0.90(0.67-1.22) | 0.83(0.57-1.23) | 1.08(0.58-2.03) | 0.815 | 0.86(0.72-1.03) | 0.299 |
| Yes | 1.00 | 0.73(0.55-0.97) | 0.67(0.47-0.96) | 0.54(0.37-0.78) | 0.49(0.29-0.82) | 0.003 | 0.77(0.65-0.92) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.90(0.46-1.78) | 0.74(0.38-1.45) | 0.65(0.29-1.50) | 0.87(0.24-3.11) | 0.422 | 0.69(0.51-0.92) | 0.769 |
| No | 1.00 | 0.79(0.63-0.99) | 0.82(0.66-1.01) | 0.72(0.54-0.97) | 0.73(0.44-1.22) | 0.084 | 0.84(0.74-0.96) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 8. Subgroup Analyses of the Association between Leucine and CVD Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Leucine | | | | | | Each SD | P-Interaction |
|  | Q1（＜3.5） | Q2（3.5-4.9） | Q3（4.9-6.3） | Q4（6.3-8.5） | Q5（≥8.5） | P-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 1.36(0.43-4.29) | 0.78(0.22-2.72) | 1.06(0.21-5.43) | 1.05(0.15-7.50) | 0.842 | 1.30(0.69-2.45) | 0.420 |
| ≥60 year | 1.00 | 0.50(0.30-0.82) | 0.95(0.66-1.36) | 0.54(0.34-0.88) | 0.51(0.27-0.98) | 0.260 | 0.87(0.68-1.11) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.43(0.15-1.19) | 0.40(0.18-0.86) | 0.31(0.14-0.65) | 0.37(0.15-0.94) | 0.011 | 0.66(0.47-0.91) | 0.261 |
| Women | 1.00 | 1.00(0.49-2.05) | 1.00(0.59-1.71) | 1.00(0.40-2.53) | 1.00(0.36-2.76) | 1.000 | 1.00(0.71-1.41) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 1.00(0.32-3.12) | 1.00(0.38-2.62) | 1.00(0.30-3.32) | 1.00(0.36-2.75) | 1.000 | 1.00(0.56-1.77) | 1.000 |
| ≥25 kg/m2 | 1.00 | 0.59(0.30-1.19) | 0.87(0.50-1.53) | 0.48(0.23-1.01) | 0.48(0.20-1.14) | 0.177 | 0.91(0.68-1.21) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.27-3.74) | 1.00(0.24-4.10) | 1.00(0.25-4.07) | 1.00(0.20-4.97) | 1.000 | 1.00(0.57-1.76) | 1.000 |
| ≥200 mg/dL | 1.00 | 0.60(0.35-1.03) | 0.77(0.47-1.25) | 0.70(0.36-1.39) | 0.53(0.21-1.33) | 0.509 | 0.92(0.68-1.25) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.60(0.32-1.11) | 1.24(0.73-2.09) | 0.90(0.50-1.65) | 0.82(0.40-1.69) | 0.634 | 1.19(0.82-1.74) | 1.000 |
| ≥150 mg/dL | 1.00 | 0.78(0.37-1.67) | 0.50(0.22-1.15) | 0.42(0.14-1.33) | 0.46(0.10-2.08) | 0.098 | 0.65(0.46-0.92) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 1.00(0.36-2.80) | 1.00(0.41-2.43) | 1.00(0.39-2.56) | 1.00(0.37-2.67) | 1.000 | 1.00(0.67-1.49) | 1.000 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.71(0.36-1.40) | 0.93(0.55-1.60) | 0.92(0.44-1.91) | 0.94(0.40-2.20) | 0.909 | 0.98(0.69-1.38) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 1.10(0.55-2.19) | 0.69(0.29-1.68) | 0.91(0.35-2.37) | 0.64(0.17-2.42) | 0.638 | 0.97(0.62-1.52) | 0.536 |
| Yes | 1.00 | 0.47(0.26-0.87) | 0.89(0.45-1.77) | 0.51(0.25-1.04) | 0.71(0.23-2.21) | 0.509 | 0.89(0.58-1.35) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.33(0.07-1.57) | 0.72(0.07-7.40) | 1.03(0.05-20.07) | 0.51(0.01-25.33) | 0.937 | 0.72(0.18-2.82) | 1.000 |
| No | 1.00 | 1.00(0.50-1.99) | 1.00(0.52-1.91) | 1.00(0.49-2.03) | 1.00(0.50-2.01) | 1.000 | 1.00(0.72-1.39) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 9. Subgroup Analyses of the Association between Leucine and Cancer Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Leucine | | | | | | Each SD | P-Interaction |
|  | Q1（＜3.5） | Q2（3.5-4.9） | Q3（4.9-6.3） | Q4（6.3-8.5） | Q5（≥8.5） | P-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 0.63(0.29-1.34) | 0.91(0.42-1.99) | 0.94(0.43-2.03) | 0.75(0.18-3.13) | 0.953 | 0.87(0.63-1.21) | 0.465 |
| ≥60 year | 1.00 | 0.75(0.47-1.19) | 0.54(0.26-1.12) | 0.35(0.16-0.81) | 0.18(0.05-0.66) | 0.006 | 0.63(0.45-0.88) |
| Sex | | | | | | | |  |
| Men | 1.00 | 1.07(0.64-1.80) | 0.94(0.48-1.82) | 0.88(0.48-1.62) | 0.47(0.14-1.61) | 0.237 | 0.78(0.52-1.16) | 0.838 |
| Women | 1.00 | 0.64(0.37-1.10) | 0.76(0.35-1.65) | 0.57(0.18-1.85) | 0.96(0.19-4.98) | 0.470 | 0.73(0.43-1.21) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 0.99(0.48-2.04) | 1.51(0.74-3.05) | 1.06(0.42-2.71) | 1.93(0.39-9.46) | 0.522 | 1.09(0.67-1.76) | 0.256 |
| ≥25 kg/m2 | 1.00 | 0.56(0.34-0.90) | 0.43(0.25-0.73) | 0.37(0.21-0.64) | 0.16(0.06-0.41) | <0.001 | 0.59(0.44-0.77) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.37-2.70) | 1.00(0.39-2.58) | 1.00(0.40-2.52) | 1.00(0.26-3.80) | 1.000 | 1.00(0.63-1.58) | 0.906 |
| ≥200 mg/dL | 1.00 | 0.72(0.46-1.13) | 0.56(0.30-1.04) | 0.42(0.23-0.75) | 0.29(0.11-0.79) | 0.006 | 0.66(0.47-0.91) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.76(0.49-1.18) | 0.72(0.37-1.43) | 0.78(0.44-1.39) | 0.56(0.16-1.96) | 0.451 | 0.76(0.56-1.05) | 0.181 |
| ≥150 mg/dL | 1.00 | 0.56(0.27-1.15) | 0.58(0.28-1.20) | 0.31(0.14-0.70) | 0.34(0.09-1.25) | 0.018 | 0.65(0.43-0.97) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 0.55(0.28-1.11) | 0.67(0.31-1.44) | 0.24(0.10-0.55) | 0.52(0.15-1.88) | 0.029 | 0.57(0.40-0.82) | 0.946 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.85(0.45-1.60) | 0.92(0.37-2.24) | 1.25(0.58-2.68) | 0.66(0.16-2.76) | 0.667 | 1.06(0.70-1.59) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.73(0.37-1.45) | 1.03(0.57-1.87) | 0.86(0.41-1.79) | 1.09(0.32-3.69) | 0.918 | 0.87(0.61-1.26) | 0.812 |
| Yes | 1.00 | 0.62(0.35-1.11) | 0.37(0.17-0.80) | 0.33(0.14-0.76) | 0.11(0.02-0.55) | 0.003 | 0.59(0.42-0.84) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.63(0.14-2.95) | 1.54(0.46-5.17) | 0.24(0.04-1.34) | 0.22(0.02-2.60) | 0.198 | 1.07(0.49-2.34) | 0.980 |
| No | 1.00 | 0.71(0.46-1.10) | 0.62(0.36-1.05) | 0.62(0.37-1.04) | 0.49(0.20-1.20) | 0.086 | 0.73(0.56-0.95) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 10. Subgroup Analyses of the Association between Valine and All-Cause Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Valine | | | | | | Each SD | P-Interaction |
|  | Q1（＜2.3） | Q2（2.3-3.2） | Q3（3.2-4.1） | Q4（4.1-5.5） | Q5（≥5.5） | P-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 0.94(0.63-1.41) | 0.90(0.59-1.37) | 0.88(0.56-1.39) | 1.05(0.52-2.14) | 0.836 | 0.87(0.71-1.07) | 0.863 |
| ≥60 year | 1.00 | 0.69(0.53-0.91) | 0.91(0.69-1.21) | 0.53(0.39-0.73) | 0.51(0.34-0.77) | 0.004 | 0.83(0.71-0.98) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.75(0.54-1.05) | 0.63(0.46-0.87) | 0.58(0.41-0.82) | 0.55(0.30-0.99) | 0.011 | 0.78(0.66-0.93) | 0.102 |
| Women | 1.00 | 0.78(0.57-1.06) | 0.90(0.64-1.26) | 0.62(0.38-1.00) | 0.97(0.45-2.09) | 0.187 | 0.75(0.60-0.93) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 0.97(0.66-1.43) | 1.35(0.91-2.01) | 0.99(0.63-1.58) | 1.69(0.95-2.99) | 0.262 | 0.95(0.75-1.21) | 0.050 |
| ≥25 kg/m2 | 1.00 | 0.73(0.55-0.96) | 0.65(0.47-0.90) | 0.50(0.37-0.68) | 0.46(0.27-0.77) | 0.000 | 0.75(0.64-0.88) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.62-1.60) | 1.00(0.61-1.64) | 1.00(0.60-1.66) | 1.00(0.46-2.18) | 1.000 | 1.00(0.79-1.27) | 0.269 |
| ≥200 mg/dL | 1.00 | 0.76(0.57-1.03) | 0.69(0.51-0.92) | 0.54(0.43-0.69) | 0.57(0.35-0.93) | 0.000 | 0.78(0.67-0.92) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.88(0.69-1.13) | 1.08(0.84-1.40) | 0.86(0.61-1.21) | 0.97(0.57-1.63) | 0.773 | 0.89(0.74-1.07) | 0.007 |
| ≥150 mg/dL | 1.00 | 0.71(0.50-1.03) | 0.54(0.34-0.87) | 0.43(0.28-0.67) | 0.52(0.26-1.04) | 0.001 | 0.71(0.59-0.85) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 0.78(0.57-1.08) | 0.74(0.51-1.07) | 0.51(0.31-0.82) | 0.89(0.43-1.87) | 0.066 | 0.72(0.58-0.88) | 0.642 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.81(0.62-1.07) | 0.96(0.73-1.28) | 0.82(0.57-1.18) | 0.75(0.44-1.29) | 0.459 | 0.93(0.77-1.12) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.80(0.59-1.10) | 0.96(0.71-1.30) | 0.72(0.48-1.10) | 1.06(0.60-1.89) | 0.560 | 0.84(0.69-1.02) | 0.291 |
| Yes | 1.00 | 0.75(0.57-1.00) | 0.70(0.50-0.98) | 0.53(0.38-0.72) | 0.50(0.30-0.82) | 0.001 | 0.77(0.65-0.91) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.90(0.42-1.90) | 0.78(0.34-1.80) | 0.61(0.27-1.36) | 0.61(0.15-2.49) | 0.226 | 0.70(0.50-0.97) | 0.897 |
| No | 1.00 | 0.78(0.62-0.99) | 0.87(0.70-1.08) | 0.66(0.50-0.88) | 0.77(0.50-1.20) | 0.045 | 0.83(0.72-0.95) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 11. Subgroup Analyses of the Association between Valine and CVD Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Valine | | | | | | Each SD | P-Interaction |
|  | Q1（＜2.3） | Q2（2.3-3.2） | Q3（3.2-4.1） | Q4（4.1-5.5） | Q5（≥5.5） | P-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 1.42(0.46-4.38) | 0.98(0.26-3.78) | 0.80(0.18-3.52) | 1.11(0.15-8.38) | 0.705 | 1.20(0.68-2.12) | 0.668 |
| ≥60 year | 1.00 | 0.59(0.31-1.12) | 1.13(0.76-1.67) | 0.59(0.36-0.95) | 0.69(0.34-1.40) | 0.372 | 0.92(0.70-1.20) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.57(0.21-1.54) | 0.40(0.17-0.99) | 0.30(0.15-0.63) | 0.44(0.15-1.30) | 0.008 | 0.63(0.45-0.89) | 0.263 |
| Women | 1.00 | 1.00(0.48-2.07) | 1.00(0.57-1.77) | 1.00(0.50-1.98) | 1.00(0.37-2.70) | 1.000 | 1.00(0.72-1.38) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 1.00(0.30-3.31) | 1.00(0.34-2.98) | 1.00(0.33-3.03) | 1.00(0.29-3.50) | 1.000 | 1.00(0.56-1.79) | 1.000 |
| ≥25 kg/m2 | 1.00 | 0.71(0.34-1.48) | 0.94(0.49-1.79) | 0.48(0.25-0.92) | 0.55(0.23-1.33) | 0.103 | 0.90(0.69-1.18) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.26-3.89) | 1.00(0.21-4.70) | 1.00(0.27-3.77) | 1.00(0.21-4.82) | 1.000 | 1.00(0.59-1.70) | 1.000 |
| ≥200 mg/dL | 1.00 | 0.75(0.38-1.48) | 0.97(0.60-1.59) | 0.74(0.40-1.35) | 0.85(0.32-2.26) | 0.625 | 0.95(0.71-1.29) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.77(0.40-1.51) | 1.46(0.78-2.71) | 0.87(0.43-1.78) | 1.17(0.43-3.18) | 0.675 | 1.22(0.83-1.78) | 1.000 |
| ≥150 mg/dL | 1.00 | 0.81(0.38-1.74) | 0.59(0.26-1.34) | 0.37(0.14-1.02) | 0.38(0.11-1.38) | 0.043 | 0.67(0.49-0.91) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 1.00(0.32-3.17) | 1.00(0.41-2.47) | 1.00(0.42-2.37) | 1.00(0.37-2.74) | 1.000 | 1.00(0.67-1.50) | 1.000 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.86(0.42-1.78) | 0.98(0.51-1.87) | 0.79(0.38-1.64) | 0.99(0.34-2.86) | 0.716 | 0.98(0.69-1.39) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 1.22(0.58-2.59) | 0.86(0.35-2.09) | 0.72(0.28-1.85) | 0.67(0.16-2.77) | 0.371 | 0.99(0.64-1.52) | 0.490 |
| Yes | 1.00 | 0.56(0.29-1.07) | 1.03(0.48-2.18) | 0.57(0.28-1.15) | 1.05(0.31-3.55) | 0.639 | 0.89(0.59-1.35) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.40(0.10-1.63) | 0.74(0.08-6.96) | 0.74(0.06-8.67) | 0.28(0.01-9.69) | 0.875 | 0.73(0.20-2.65) | 1.000 |
| No | 1.00 | 1.00(0.44-2.29) | 1.00(0.50-1.99) | 1.00(0.53-1.87) | 1.00(0.48-2.08) | 1.000 | 1.00(0.72-1.38) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.

Supplementary Table 12. Subgroup Analyses of the Association between Valine and Cancer Mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Valine | | | | | | Each SD | P-Interaction |
|  | Q1（＜2.3） | Q2（2.3-3.2） | Q3（3.2-4.1） | Q4（4.1-5.5） | Q5（≥5.5） | P-trend |
| Age | | | | | | | |  |
| <60 year | 1.00 | 0.59(0.26-1.34) | 0.88(0.42-1.87) | 0.76(0.33-1.75) | 0.68(0.18-2.65) | 0.763 | 0.86(0.61-1.21) | 0.678 |
| ≥60 year | 1.00 | 0.67(0.40-1.12) | 0.70(0.35-1.40) | 0.37(0.17-0.81) | 0.26(0.07-0.98) | 0.013 | 0.62(0.45-0.86) |
| Sex | | | | | | | |  |
| Men | 1.00 | 0.80(0.40-1.61) | 0.81(0.43-1.51) | 0.69(0.31-1.53) | 0.38(0.10-1.46) | 0.165 | 0.78(0.51-1.19) | 0.805 |
| Women | 1.00 | 0.66(0.39-1.14) | 0.85(0.40-1.80) | 0.53(0.18-1.62) | 1.17(0.21-6.40) | 0.495 | 0.71(0.44-1.14) |
| BMI | | | | | | | |  |
| <25 kg/m2 | 1.00 | 0.95(0.47-1.91) | 1.90(0.93-3.88) | 0.97(0.39-2.40) | 2.99(0.75-11.92) | 0.265 | 0.97(0.59-1.57) | 0.165 |
| ≥25 kg/m2 | 1.00 | 0.49(0.30-0.82) | 0.41(0.25-0.67) | 0.33(0.18-0.62) | 0.13(0.05-0.37) | <0.001 | 0.61(0.46-0.80) |
| TC | | | | | | | |  |
| <200 mg/dL | 1.00 | 1.00(0.44-2.29) | 1.00(0.36-2.82) | 1.00(0.39-2.59) | 1.00(0.26-3.80) | 1.000 | 1.00(0.58-1.71) | 0.901 |
| ≥200 mg/dL | 1.00 | 0.59(0.36-0.96) | 0.58(0.31-1.07) | 0.38(0.21-0.71) | 0.32(0.11-0.88) | 0.011 | 0.66(0.48-0.90) |
| TG | | | | | | | |  |
| <150 mg/dL | 1.00 | 0.65(0.40-1.06) | 0.81(0.45-1.45) | 0.65(0.33-1.28) | 0.60(0.18-2.04) | 0.384 | 0.73(0.52-1.02) | 0.203 |
| ≥150 mg/dL | 1.00 | 0.57(0.26-1.22) | 0.60(0.29-1.23) | 0.36(0.18-0.70) | 0.35(0.10-1.29) | 0.016 | 0.66(0.47-0.94) |
| HDL | | | | | | | |  |
| <40 mg/dL men/  <50mg/dL women | 1.00 | 0.61(0.31-1.20) | 0.62(0.31-1.24) | 0.27(0.11-0.66) | 0.59(0.17-2.05) | 0.041 | 0.56(0.39-0.80) | 0.863 |
| ≥40 mg/dL men/  ≥50mg/dL women | 1.00 | 0.67(0.35-1.27) | 1.04(0.53-2.08) | 1.00(0.47-2.10) | 0.65(0.19-2.23) | 0.814 | 1.02(0.67-1.53) |
| Hypertension |  |  |  |  |  |  |  |  |
| No | 1.00 | 0.60(0.30-1.22) | 1.06(0.59-1.88) | 0.69(0.30-1.62) | 1.01(0.30-3.36) | 0.873 | 0.82(0.56-1.19) | 0.906 |
| Yes | 1.00 | 0.64(0.36-1.13) | 0.42(0.19-0.94) | 0.35(0.15-0.83) | 0.15(0.03-0.75) | 0.007 | 0.61(0.44-0.86) |
| Diabetes |  |  |  |  |  |  |  |  |
| Yes | 1.00 | 0.84(0.13-5.31) | 3.13(0.63-15.45) | 0.67(0.13-3.46) | 0.38(0.03-4.82) | 0.567 | 1.02(0.49-2.15) | 0.594 |
| No | 1.00 | 0.63(0.40-1.00) | 0.68(0.42-1.09) | 0.53(0.29-0.94) | 0.52(0.22-1.25) | 0.069 | 0.72(0.55-0.93) |

Adjusted for age, sex and animal protein, BMI, SBP, DBP, TC, TG, UA, URP, LDL, HDL, GLU. Animal Protein, Race/ethnicity, Education, Annual household income, Drinking, Smoking, Physical activity.