**Table 1**: Epidemiological case-control studies on dietary intake of flavonoids and colorectal cancer risk.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Flavonoid subclass** | **Certain compound** | **Cancer subsite** | **Studya** | **Population** | **Gen-derb** | **Cont-rolsc** | **Cases/controls** | **Intake comparison (low vs.** **high, mg/day)d** | **Multivariate-adjusted ORe** | **P for trendf** | **Commentsg** | **Refe-rence** |
| **Flavonoids** |  |  |  | Italian | F, M | HB | 1953/4154 | 75.3 vs. 191.1 (upper cutpoint; Q5) | 0.97 (0.81-1.16) | 0.500 | 19-74 y; no significant effect modification by age (< 60 y vs. ≥ 60 y) or BMI (< 25 or ≥ 25) | [21] |
| **Flavonoids** |  |  |  | Italian | M | HB | 1125/2073 | (Q5) | 1.04 (0.94-1.15) |  | 19-74 y | [21] |
| **Flavonoids** |  |  |  | Italian | F | HB | 828/2081 | (Q5) | 0.93 (0.82-1.05) |  | 19-74 y | [21] |
| **Flavonoids** |  |  | BCCS | Spanish | F, M | HB | 424/401 | < 68.9 vs. > 167.9/1000 kcal (upper cutoff; Q4) | 0.59 (0.35-0.99) | 0.04\* |  | [18] |
| **Flavonoids** |  |  |  | Chinese | F, M | HB | 1632/1632 | (Q4) | 1.06 (0.85-1.32) | 0.76 |  | [11] |
| **Flavonoids** |  |  |  | Chinese | M | HB | 910/910 | (Q4) | 0.83 (0.60-1.15) | 0.19 |  | [11] |
| **Flavonoids** |  |  |  | Chinese | F | HB | 722/722 | (Q4) | 1.20 (0.86-1.66) | 0.43 |  | [11] |
| **Flavonoids** |  | Colon |  | Italian | F, M | HB | 1225/4154 | (Q5) | 1.08 (0.87-1.34) |  | 19-74 y | [21] |
| **Flavonoids** |  | Colon | BCCS | Spanish | F, M | HB | 265/401 | (Q4) | 0.55 (0.30-0.99) | 0.06 |  | [18] |
| **Flavonoids** |  | Colon |  | Chinese | F, M | HB | 983/1632 | (Q4) | 0.92 (0.71-1.18) | 0.55 |  | [11] |
| **Flavonoids** |  | Rectum |  | Italian | F, M | HB | 728/4154 | (Q5) | 0.83 (0.64-1.07) |  | 19-74 y | [21] |
| **Flavonoids** |  | Rectum | BCCS | Spanish | F, M | HB | 159/401 | (Q4) | 0.64 (0.32-1.29) | 0.14 |  | [18] |
| **Flavonoids** |  | Rectum |  | Chinese | F, M | HB | 649/1632 | (Q4) | 1.28 (0.96-1.72) | 0.18 |  | [11] |
| **Flavones** |  |  |  | Italian | F, M | HB | 1953/4154 | 0.3 vs. 0.7 (upper cutpoint; Q5) | 0.78 (0.65-0.93) | 0.004\* | 19-74 y; no significant effect modification by age ( < 60 y vs. ≥ 60 y) or BMI ( < 25 or ≥ 25) | [21] |
| **Flavones** |  |  |  | Italian | M | HB | 1125/2073 | (Q5) | 0.91 (0.82-1.01) |  | 19-74 y | [21] |
| **Flavones** |  |  |  | Italian | F | HB | 828/2081 | (Q5) | 0.92 (0.82-1.03) |  | 19-74 y | [21] |
| **Flavones** |  |  | SOCCS | Scottish | F, M | PB | 1456/1456 | < 0.5 vs. > 1.9 (Q4) | 1.11 (0.88-1.40) | 0.602 | 16-79 y; no significant effect modification by smoking status (non-smokers vs. smokers) | [20] |
| **Flavones** |  |  | SOCCS | Scottish | M | PB | 846/844 | (Q4) | 1.08 (0.80-1.45) | 0.986 | 16-79 y | [20] |
| **Flavones** |  |  | SOCCS | Scottish | F | PB | 610/609 | (Q4) | 1.11 (0.76-1.64) | 0.624 | 16-79 y | [20] |
| **Flavones** |  |  | BCCS | Spanish | F, M | HB | 424/401 | < 0.7 vs. > 2.1/1000 kcal (upper cutoff; Q4) | 0.59 (0.37-0.93) | 0.01\* |  | [18] |
| **Flavones** |  |  |  | Chinese | F, M | HB | 1632/1632 | (Q4) | 0.54 (0.43-0.67) | < 0.01\* |  | [11] |
| **Flavones** |  |  |  | Chinese | M | HB | 910/910 | (Q4) | 0.54 (0.40-0.75) | < 0.01\* |  | [11] |
| **Flavones** |  |  |  | Chinese | F | HB | 722/722 | (Q4) | 0.56 (0.40-0.77) | < 0.01\* |  | [11] |
| **Flavones** |  | Colon |  | Italian | F, M | HB | 1225/4154 | (Q5) | 0.77 (0.62-0.95) | \* | 19-74 y | [21] |
| **Flavones** |  | Colon | SOCCS | Scottish | F, M | PB | 822/1456 | (Q4) | 1.07 (0.79-1.46) | 0.758 | 16-79 y | [20] |
| **Flavones** |  | Colon | BCCS | Spanish | F, M | HB | 265/401 | (Q4) | 0.54 (0.32-0.92) | 0.02\* |  | [18] |
| **Flavones** |  | Colon |  | Chinese | F, M | HB | 983/1632 | (Q4) | 0.52 (0.40-0.67) | < 0.01\* |  | [11] |
| **Flavones** |  | Rectum |  | Italian | F, M | HB | 728/4154 | (Q5) | 0.78 (0.61-1.00) | \* | 19-74 y | [21] |
| **Flavones** |  | Rectum | SOCCS | Scottish | F, M | PB | 606/1456 | (Q4) | 1.03 (0.70-1.50) | 0.873 | 16-79 y | [20] |
| **Flavones** |  | Rectum | BCCS | Spanish | F, M | HB | 159/401 | (Q4) | 0.69 (0.37-1.28) | 0.47 |  | [18] |
| **Flavones** |  | Rectum |  | Chinese | F, M | HB | 649/1632 | (Q4) | 0.54 (0.41-0.72) | < 0.01\* |  | [11] |
| **Flavonols** |  |  |  | Italian | F, M | HB | 1953/4154 | 13.2 vs. 28.5 (upper cutpoint; Q5) | 0.64 (0.54-0.77) | < 0.001\* | 19-74 y; no significant effect modification by age (< 60 y vs. ≥ 60 y) or BMI (< 25 or ≥ 25) | [21] |
| **Flavonols** |  |  |  | Italian | M | HB | 1125/2073 | (Q5) | 0.88 (0.79-0.98) |  | 19-74 y | [21] |
| **Flavonols** |  |  |  | Italian | F | HB | 828/2081 | (Q5) | 0.85 (0.76-0.95) |  | 19-74 y | [21] |
| **Flavonols** |  |  |  | Scottish | F, M | PB | 264/408 | < 19.30 vs. > 40.41 (Q4) | 0.8 (0.5-1.3) | 0.37 | 32-92 y; total dietary flavonols; inverse association for non-tea flavonols [0.6 (0.4-1.0), p 0.03\*] | [12] |
| **Flavonols** |  |  | SOCCS | Scottish | F, M | PB | 1456/1456 | < 16.00 vs. > 36.75 (Q4) | 0.73 (0.59-0.91) | 0.015\* | 16-79 y; statistically significant inverse association for non-smokers [0.52 (0.30-0.90), p 0.030\*], not smokers | [20] |
| **Flavonols** |  |  | SOCCS | Scottish | M | PB | 846/844 | (Q4) | 0.72 (0.53-0.96) | 0.037\* | 16-79 y | [20] |
| **Flavonols** |  |  | SOCCS | Scottish | F | PB | 610/609 | (Q4) | 0.72 (0.72-1.01) | 0.199 | 16-79 y | [20] |
| **Flavonols** |  |  | BCCS | Spanish | F, M | HB | 424/401 | < 5.1 vs. > 11.5/1000 kcal (upper cutoff; Q4) | 0.79 (0.46-1.33) | 0.27 |  | [18] |
| **Flavonols** |  |  |  | Chinese | F, M | HB | 1632/1632 | (Q4) | 0.80 (0.64-0.99) | 0.05 |  | [11] |
| **Flavonols** |  |  |  | Chinese | M | HB | 910/910 | (Q4) | 0.51 (0.37-0.71) | < 0.01\* |  | [11] |
| **Flavonols** |  |  |  | Chinese | F | HB | 722/722 | (Q4) | 1.13 (0.82-1.57) | 0.68 |  | [11] |
| **Flavonols** |  | Colon |  | Italian | F, M | HB | 1225/4154 | (Q5) | 0.65 (0.53-0.81) | \* | 19-74 y | [21] |
| **Flavonols** |  | Colon |  | Scottish | F, M | PB | 186/408 | < 19.30 vs. > 40.41 (Q4) | 0.7 (0.4-2.1) | 0.54 | 32-92 y; total dietary flavonols; inverse association for non-tea flavonols [0.5 (0.3-0.8), p 0.01\*] | [12] |
| **Flavonols** |  | Colon | SOCCS | Scottish | F, M | PB | 822/1456 | (Q4) | 0.79 (0.59-1.06) | 0.123 | 16-79 y | [20] |
| **Flavonols** |  | Colon | BCCS | Spanish | F, M | HB | 265/401 | (Q4) | 0.65 (0.35-1.18) | 0.08 |  | [18] |
| **Flavonols** |  | Colon |  | Chinese | F, M | HB | 983/1632 | (Q4) | 0.82 (0.64-1.06) | 0.17 |  | [11] |
| **Flavonols** |  | Rectum |  | Italian | F, M | HB | 728/4154 | (Q5) | 0.63 (0.48-0.83) | \* | 19-74 y | [21] |
| **Flavonols** |  | Rectum |  | Scottish | F, M | PB | 75/408 | < 19.30 vs. > 40.41 (Q4) | 1.1 (0.5-2.3) | 0.96 | 32-92 y; total dietary flavonols; no association also for non-tea flavonols | [12] |
| **Flavonols** |  | Rectum | SOCCS | Scottish | F, M | PB | 606/1456 | (Q4) | 0.69 (0.49-0.98) | 0.150 | 16-79 y | [20] |
| **Flavonols** |  | Rectum | BCCS | Spanish | F, M | HB | 159/401 | (Q4) | 1.00 (0.47-2.10) | 0.96 |  | [18] |
| **Flavonols** |  | Rectum |  | Chinese | F, M | HB | 649/1632 | (Q4) | 0.73 (0.55-0.98) | 0.03\* |  | [11] |
| **Flavonols** | **Kaempferol** |  |  | Scottish | F, M | PB | 261/408 | < 0.50 vs. > 1.11 (Q4) | 1.1 (0.6-2.0) | 0.94 | 32-92 y; for non-tea kaempferol only | [12] |
| **Flavonols** | **Kaempferol** | Colon |  | Scottish | F, M | PB | 186/408 | < 0.50 vs. > 1.11 (Q4) | 1.2 (0.7-1.1) | 0.98 | 32-92 y; for non-tea kaempferol only | [12] |
| **Flavonols** | **Kaempferol** | Rectum |  | Scottish | F, M | PB | 75/408 | < 0.50 vs. > 1.11 (Q4) | 1.0 (0.4-2.3) | 0.98 | 32-92 y; for non-tea kaempferol only | [12] |
| **Flavonols** | **Myricetin** |  |  | Scottish | F, M | PB | 261/408 | < 0.04 vs. > 0.45 (Q4) | 0.7 (0.5-1.1) | 0.27 | 32-92 y; for non-tea myricetin only | [12] |
| **Flavonols** | **Myricetin** | Colon |  | Scottish | F, M | PB | 186/408 | < 0.04 vs. > 0.45 (Q4) | 0.7 (0.4-1.2) | 0.13 | 32-92 y; for non-tea myricetin only | [12] |
| **Flavonols** | **Myricetin** | Rectum |  | Scottish | F, M | PB | 75/408 | < 0.04 vs. > 0.45 (Q4) | 0.8 (0.4-1.7) | 0.94 | 32-92 y; for non-tea myricetin only | [12] |
| **Flavonols** | **Quercetin** |  |  | American | F, M | PB | 1163/1501 | (Q4) | 0.95 (0.76-1.20) | 0.726 | 45-80 y | [22] |
| **Flavonols** | **Quercetin** |  |  | Scottish | F, M | PB | 261/408 | < 4.76 vs. > 9.56 (Q4) | 0.6 (0.4-0.9) | 0.01\* | 32-92 y; for non-tea quercetin only | [12] |
| **Flavonols** | **Quercetin** |  | SOCCS | Scottish | F, M | PB | 1456/1456 | < 11.67 vs. > 22.86 (Q4) | 0.70 (0.56-0.87) | 0.002\* | 16-79 y; significant inverse association for non-smokers [0.63 (0.36-1.11), p 0.044\*], not smokers | [20] |
| **Flavonols** | **Quercetin** |  | SOCCS | Scottish | M | PB | 846/844 |  (Q4) | 0.68 (0.50-0.92) | 0.005\* | 16-79 y | [20] |
| **Flavonols** | **Quercetin** |  | SOCCS | Scottish | F | PB | 610/609 |  (Q4) | 0.71 (0.51-1.00) | 0.120 | 16-79 y | [20] |
| **Flavonols** | **Quercetin** | Colon |  | Scottish | F, M | PB | 186/408 | < 4.76 vs. > 9.56 (Q4) | 0.4 (0.2-0.8) | 0.01\* | 32-92 y; for non-tea quercetin only | [12] |
| **Flavonols** | **Quercetin** | Colon | SOCCS | Scottish | F, M | PB | 822/1456 |  (Q4) | 0.76 (0.56-1.02) | 0.046\* | 16-79 y | [20] |
| **Flavonols** | **Quercetin** | Colon, proximal |  | American | F, M | PB | 483/1501 | (Q4) | 0.70 (0.51-0.95) | 0.097 | 45-80 y | [22] |
| **Flavonols** | **Quercetin** | Colon, distal |  | American | F, M | PB | 674/1501 | (Q4) | 1.20 (0.92-1.57) | 0.053 | 45-80 y | [22] |
| **Flavonols** | **Quercetin** | Rectum |  | Scottish | F, M | PB | 75/408 | < 4.76 vs. > 9.56 (Q4) | 0.9 (0.4-1.9) | 0.38 | 32-92 y; for non-tea quercetin only | [12] |
| **Flavonols** | **Quercetin** | Rectum | SOCCS | Scottish | F, M | PB | 606/1456 |  (Q4) | 0.68 (0.48-0.98) | 0.071 | 16-79 y | [20] |
| **Flavanones** |  |  |  | Italian | F, M | HB | 1953/4154 | 12.5 vs. 67.0 (upper cutpoint; Q5) | 0.96 (0.81-1.15) | 0.430 | 19-74 y; no significant effect modification by age (< 60 y vs. ≥ 60 y) or BMI (< 25 or ≥ 25) | [21] |
| **Flavanones** |  |  |  | Italian | M | HB | 1125/2073 | (Q5) | 0.97 (0.86-1.11) |  | 19-74 y | [21] |
| **Flavanones** |  |  |  | Italian | F | HB | 828/2081 | (Q5) | 1.00 (0.88-1.14) |  | 19-74 y | [21] |
| **Flavanones** |  |  |  | Scottish | F, M | PB | 264/408 | < 2.73 vs. > 32.19 (Q4) | 1.6 (1.0-2.6) | 0.04\* | 32-92 y; total dietary flavanones | [12] |
| **Flavanones** |  |  | SOCCS | Scottish | F, M | PB | 1456/1456 | < 16.67 vs. > 45.16 (Q4) | 1.13 (0.89-1.43) | 0.367 | 16-79 y; no significant effect modification by smoking status (non-smokers vs. smokers) | [20] |
| **Flavanones** |  |  | SOCCS | Scottish | M | PB | 846/844 | (Q4) | 1.16 (0.84-1.59) | 0.355 | 16-79 y | [20] |
| **Flavanones** |  |  | SOCCS | Scottish | F | PB | 610/609 | (Q4) | 1.07 (0.74-1.55) | 0.732 | 16-79 y | [20] |
| **Flavanones** |  |  | BCCS | Spanish | F, M | HB | 424/401 | < 3.7 vs. > 17.7/1000 kcal (upper cutoff; Q4) | 1.19 (0.75-1.91) | 0.85 |  | [18] |
| **Flavanones** |  |  |  | Chinese | F, M | HB | 1632/1632 | (Q4) | 0.28 (0.22-0.36) | < 0.01\* |  | [11] |
| **Flavanones** |  |  |  | Chinese | M | HB | 910/910 | (Q4) | 0.17 (0.11-0.25) | < 0.01\* |  | [11] |
| **Flavanones** |  |  |  | Chinese | F | HB | 722/722 | (Q4) | 0.46 (0.32-0.66) | < 0.01\* |  | [11] |
| **Flavanones** |  | Colon |  | Italian | F, M | HB | 1225/4154 | (Q5) | 1.05 (0.85-1.29) |  | 19-74 y | [21] |
| **Flavanones** |  | Colon |  | Scottish | F, M | PB | 186/408 | < 2.73 vs. > 32.19 (Q4) | 1.3 (0.7-2.4) | 0.01\* | 32-92 y; total dietary flavanones | [12] |
| **Flavanones** |  | Colon | SOCCS | Scottish | F, M | PB | 822/1456 | (Q4) | 1.19 (0.87-1.63) | 0.423 | 16-79 y | [20] |
| **Flavanones** |  | Colon | BCCS | Spanish | F, M | HB | 265/401 | (Q4) | 1.17 (0.68-2.00) | 0.85 |  | [18] |
| **Flavanones** |  | Colon |  | Chinese | F, M | HB | 983/1632 | (Q4) | 0.30 (0.22-0.40) | < 0.01\* |  | [11] |
| **Flavanones** |  | Rectum |  | Italian | F, M | HB | 728/4154 | (Q5) | 0.86 (0.66-1.11) |  | 19-74 y | [21] |
| **Flavanones** |  | Rectum |  | Scottish | F, M | PB | 75/408 | < 2.73 vs. > 32.19 (Q4) | 1.3 (0.5-3.4) | 0.51 | 32-92 y; total dietary flavanones | [12] |
| **Flavanones** |  | Rectum | SOCCS | Scottish | F, M | PB | 606/1456 | (Q4) | 0.98 (0.66-1.44) | 0.851 | 16-79 y | [20] |
| **Flavanones** |  | Rectum | BCCS | Spanish | F, M | HB | 159/401 | (Q4) | 1.20 (0.64-2.27) | 0.97 |  | [18] |
| **Flavanones** |  | Rectum |  | Chinese | F, M | HB | 649/1632 | (Q4) | 0.27 (0.19-0.39) | < 0.01\* |  | [11] |
| **Flavanones** | **Hesperetin** |  | SOCCS | Scottish | F, M | PB | 1456/1456 | < 3.95 vs. > 21.13 (Q4) | 1.11 (0.87-1.40) | 0.460 | 16-79 y; no significant effect modification by smoking status (non-smokers vs. smokers) | [20] |
| **Flavanones** | **Hesperetin** |  | SOCCS | Scottish | M | PB | 846/844 | (Q4) | 1.15 (0.84-1.58) | 0.424 | 16-79 y | [20] |
| **Flavanones** | **Hesperetin** |  | SOCCS | Scottish | F | PB | 610/609 | (Q4) | 1.03 (0.72-1.49) | 0.837 | 16-79 y | [20] |
| **Flavanones** | **Hesperetin** | Colon | SOCCS | Scottish | F, M | PB | 822/1456 | (Q4) | 1.12 (0.82-1.53) | 0.613 | 16-79 y | [20] |
| **Flavanones** | **Hesperetin** | Rectum | SOCCS | Scottish | F, M | PB | 606/1456 | (Q4) | 1.05 (0.72-1.54) | 0.655 | 16-79 y | [20] |
| **Flavanones** | **Naringenin** |  | SOCCS | Scottish | F, M | PB | 1456/1456 | < 3.81 vs. > 21.13 (Q4) | 1.09 (0.86-1.39) | 0.381 | 16-79 y; no significant effect modification by smoking status (non-smokers vs. smokers) | [20] |
| **Flavanones** | **Naringenin** |  | SOCCS | Scottish | M | PB | 846/844 | (Q4) | 1.16 (0.84-1.60) | 0.315 | 16-79 y | [20] |
| **Flavanones** | **Naringenin** |  | SOCCS | Scottish | F | PB | 610/609 | (Q4) | 1.03 (0.71-1.49) | 0.824 | 16-79 y | [20] |
| **Flavanones** | **Naringenin** | Colon | SOCCS | Scottish | F, M | PB | 822/1456 | (Q4) | 1.18 (0.86-1.61) | 0.427 | 16-79 y | [20] |
| **Flavanones** | **Naringenin** | Rectum | SOCCS | Scottish | F, M | PB | 606/1456 | (Q4) | 0.94 (0.64-1.38) | 0.880 | 16-79 y | [20] |
| **Flavanols** |  |  |  | Italian | F, M | HB | 1953/4154 | 20.8 vs. 88.5 (upper cutpoint; Q5) | 0.98 (0.82-1.18) | 0.736 | 19-74 y; no significant effect modification by age (< 60 y vs. ≥ 60 y) or BMI (< 25 or ≥ 25) | [21] |
| **Flavanols** |  |  |  | Italian | M | HB | 1125/2073 | (Q5) | 1.09 (1.01-1.18) |  | 19-74 y | [21] |
| **Flavanols** |  |  |  | Italian | F | HB | 828/2081 | (Q5) | 0.98 (0.90-1.07) |  | 19-74 y | [21] |
| **Flavanols** |  |  |  | Scottish | F, M | PB | 264/408 | < 67.10 vs. > 188.81 (Q4) | 0.6 (0.4-1.0) | 0.17 | 32-92 y; total dietary flavanols; no association for non-tea flavanols | [12] |
| **Flavanols** |  |  | SOCCS | Scottish | F, M | PB | 1456/1456 | < 42.6 vs. > 162.1 (Q4) | 0.81 (0.65-1.01) | 0.076 | 16-79 y; no significant effect modification by smoking status (non-smokers vs. smokers) | [20] |
| **Flavanols** |  |  | SOCCS | Scottish | M | PB | 846/844 | (Q4) | 0.83 (0.62-1.13) | 0.395 | 16-79 y | [20] |
| **Flavanols** |  |  | SOCCS | Scottish | F | PB | 610/609 | (Q4) | 0.81 (0.65-1.01) | 0.291 | 16-79 y | [20] |
| **Flavanols** |  |  | BCCS | Spanish | F, M | HB | 424/401 | < 4.9 vs. > 12.9/1000 kcal (upper cutoff; Q4) | 0.79 (0.49-1.28) | 0.35 |  | [18] |
| **Flavanols** |  |  |  | Chinese | F, M | HB | 1632/1632 | (Q4) | 1.25 (0.99-1.56) | 0.07 |  | [11] |
| **Flavanols** |  |  |  | Chinese | M | HB | 910/910 | (Q4) | 1.14 (0.82-1.60) | 0.47 |  | [11] |
| **Flavanols** |  |  |  | Chinese | F | HB | 722/722 | (Q4) | 1.24 (0.91-1.71) | 0.20 |  | [11] |
| **Flavanols** |  | Colon |  | Italian | F, M | HB | 1225/4154 | (Q5) | 1.12 (0.90-1.39) |  | 19-74 y | [21] |
| **Flavanols** |  | Colon |  | Scottish | F, M | PB | 186/408 | < 67.10 vs. > 188.81 (Q4) | 0.5 (0.3-1.0) | 0.16 | 32-92 y; total dietary flavanols; no association for non-tea flavanols | [12] |
| **Flavanols** |  | Colon | SOCCS | Scottish | F, M | PB | 822/1456 | (Q4) | 0.79 (0.59-1.07) | 0.393 | 16-79 y | [20] |
| **Flavanols** |  | Colon | BCCS | Spanish | F, M | HB | 265/401 | (Q4) | 0.78 (0.45-1.34) | 0.38 |  | [18] |
| **Flavanols** |  | Colon |  | Chinese | F, M | HB | 983/1632 | (Q4) | 1.04 (0.80-1.34) | 0.68 |  | [11] |
| **Flavanols** |  | Rectum |  | Italian | F, M | HB | 728/4154 | (Q5) | 0.81 (0.62-1.06) |  | 19-74 y | [21] |
| **Flavanols** |  | Rectum |  | Scottish | F, M | PB | 75/408 | < 67.10 vs. > 188.81 (Q4) | 0.7 (0.4-1.4) | 0.48 | 32-92 y; total dietary flavanols; no association for non-tea flavanols | [12] |
| **Flavanols** |  | Rectum | SOCCS | Scottish | F, M | PB | 606/1456 | (Q4) | 0.87 (0.62-1.24) | 0.56 | 16-79 y | [20] |
| **Flavanols** |  | Rectum | BCCS | Spanish | F, M | HB | 159/401 | (Q4) | 0.78 (0.39-1.54) | 0.53 |  | [18] |
| **Flavanols** |  | Rectum |  | Chinese | F, M | HB | 649/1632 | (Q4) | 1.58 (1.18-2.12) | <0.01\* |  | [11] |
| **Flavanols** | **Catechin** |  | SOCCS | Scottish | F, M | PB | 1456/1456 | < 4.85 vs. > 9.40 (Q4) | 0.69 (0.55-0.87) | <0.0005\* | 16-79 y; significant inverse association for non-smokers [0.57 (0.32-1.00), p 0.014\*], not smokers | [20] |
| **Flavanols** | **Catechin** |  | SOCCS | Scottish | M | PB | 846/844 | (Q4) | 0.64 (0.47-0.85) | 0.002\* | 16-79 y | [20] |
| **Flavanols** | **Catechin** |  | SOCCS | Scottish | F | PB | 610/609 | (Q4) | 0.82 (0.57-1.17) | 0.121 | 16-79 y | [20] |
| **Flavanols** | **Catechin** | Colon | SOCCS | Scottish | F, M | PB | 822/1456 | (Q4) | 0.66 (0.49-0.89) | 0.006\* | 16-79 y | [20] |
| **Flavanols** | **Catechin** | Rectum | SOCCS | Scottish | F, M | PB | 606/1456 | (Q4) | 0.77 (0.54-1.10) | 0.063 | 16-79 y | [20] |
| **Flavanols** | **Epicatechin** |  | SOCCS | Scottish | F, M | PB | 1456/1456 | < 13.29 vs. > 32.61 (Q4) | 0.74 (0.60-0.92) | 0.031\* | 16-79 y; inverse association for non-smokers [0.59 (0.35-1.00), p 0.052], not smokers | [20] |
| **Flavanols** | **Epicatechin** |  | SOCCS | Scottish | M | PB | 846/844 | (Q4) | 0.77 (0.58-1.03) | 0.123 | 16-79 y | [20] |
| **Flavanols** | **Epicatechin** |  | SOCCS | Scottish | F | PB | 610/609 | (Q4) | 0.70 (0.50-0.99) | 0.129 | 16-79 y | [20] |
| **Flavanols** | **Epicatechin** | Colon | SOCCS | Scottish | F, M | PB | 822/1456 | (Q4) | 0.77 (0.58-1.04) | 0.149 | 16-79 y | [20] |
| **Flavanols** | **Epicatechin** | Rectum | SOCCS | Scottish | F, M | PB | 606/1456 | (Q4) | 0.75 (0.53-1.05) | 0.215 | 16-79 y | [20] |
| **Isoflavones** |  |  | OFCCR | Canadian | F, M | PB | 1095/1890 | < 0.289 vs. > 1.097 (T3) | 0.71 (0.58-0.86) | <0.01\* | 20-74 y | [24] |
| **Isoflavones** |  |  | EPIC-Norfolk | English | M | PB | 125/504 |  | 1.12 (0.88-1.42) | 0.53 | 40-79 y | [23] |
| **Isoflavones** |  |  | EPIC-Norfolk | English | F | PB | 94/379 |  | 1.24 (0.94-1.63) | 0.13 | 40-79 y | [23] |
| **Isoflavones** |  |  |  | Italian | F, M | HB | 1953/4154 | 0.0144 vs. 0.0339 (upper cutpoint; Q5) | 0.76 (0.63-0.91) | 0.001\* | 19-74 y; no significant effect modification by age (< 60 y vs. ≥ 60 y) or BMI (< 25 or ≥ 25) | [21] |
| **Isoflavones** |  |  |  | Italian | M | HB | 1125/2073 | (Q5) | 0.90 (0.81-1.00) |  | 19-74 y | [21] |
| **Isoflavones** |  |  |  | Italian | F | HB | 828/2081 | (Q5) | 0.94 (0.85-1.04) |  | 19-74 y | [21] |
| **Isoflavones** |  |  | BCCS | Spanish | F, M | HB | 424/401 | < 0.07 vs. > 0.17/1000 kcal (upper cutoff; Q4) | 1.25 (0.82-1.88) | 0.24 |  | [18] |
| **Isoflavones** |  |  |  | Korean | M | PB | 624/1872 | < 7.63 vs. ≥ 20.89 (Q4) | 0.71 (0.52-0.97) | 0.005\* |  | [25] |
| **Isoflavones** |  |  |  | Korean | F | PB | 298/894 | < 7.63 vs. ≥ 20.89 (Q4) | 0.78 (0.50-1.23) | 0.087 | Stronger insignificant inverse association for postmenopausal than premenopausal women | [25] |
| **Isoflavones** |  | Colon |  | Italian | F, M | HB | 1225/4154 | (Q5) | 0.70 (0.56-0.87) | \* | 19-74 y | [21] |
| **Isoflavones** |  | Colon | BCCS | Spanish | F, M | HB | 265/401 | (Q4) | 1.50 (0.93-2.41) | 0.04\* |  | [18] |
| **Isoflavones** |  | Colon, proximal |  | Korean | M | PB | 113/1872 | < 7.63 vs. ≥ 20.89 (Q4) | 1.29 (0.69-2.42) | 0.940 |  | [25] |
| **Isoflavones** |  | Colon, proximal |  | Korean | F | PB | 53/894 | < 8.08 vs. ≥ 22.35 (Q4) | 0.89 (0.32-1.11) | 0.325 |  | [25] |
| **Isoflavones** |  | Colon, distal |  | Korean | M | PB | 178/1872 | < 7.63 vs. ≥ 20.89 (Q4) | 0.34 (0.20-0.59) | <0.001\* |  | [25] |
| **Isoflavones** |  | Colon, distal |  | Korean | F | PB | 113/894 | < 8.08 vs. ≥ 22.35 (Q4) | 1.16 (0.60-2.26) | 0.931 |  | [25] |
| **Isoflavones** |  | Rectum |  | Italian | F, M | HB | 728/4154 | (Q5) | 0.81 (0.63-1.04) | \* | 19-74 y | [21] |
| **Isoflavones** |  | Rectum | BCCS | Spanish | F, M | HB | 159/401 | (Q4) | 0.83 (0.47-1.47) | 0.49 |  | [18] |
| **Isoflavones** |  | Rectum |  | Korean | M | PB | 320/1872 | < 7.63 vs. ≥ 20.89 (Q4) | 0.88 (0.56-1.32) | 0.215 |  | [25] |
| **Isoflavones** |  | Rectum |  | Korean | F | PB | 124/894 | < 8.08 vs. ≥ 22.35 (Q4) | 0.60 (0.32-1.11) | 0.035\* |  | [25] |
| **Isoflavones** | **Genistein** |  | EPIC-Norfolk | English | M | PB | 125/504 |  | 1.11 (0.87-1.39) | 0.37 | 40-79 y | [23] |
| **Isoflavones** | **Genistein** |  | EPIC-Norfolk | English | F | PB | 94/379 |  | 1.22 (0.94-1.58) | 0.14 | 40-79 y | [23] |
| **Isoflavones** | **Genistein** |  |  | Korean | M | PB | 624/1872 | < 3.33 vs. ≥ 9.09 (Q4) | 0.84 (0.62-1.14) | 0.155 |  | [25] |
| **Isoflavones** | **Genistein** |  |  | Korean | F | PB | 298/894 | < 3.33 vs. ≥ 9.09 (Q4) | 0.86 (0.55-1.35) | 0.215 | No effect modification by menopausal status | [25] |
| **Isoflavones** | **Genistein** | Colon, proximal |  | Korean | M | PB | 113/1872 | < 3.33 vs. ≥ 9.09 (Q4) | 1.58 (0.85-2.95) | 0.361 |  | [25] |
| **Isoflavones** | **Genistein** | Colon, proximal |  | Korean | F | PB | 53/894 | < 3.56 vs. ≥ 9.79 (Q4) | 0.90 (0.32-2.53) | 0.466 |  | [25] |
| **Isoflavones** | **Genistein** | Colon, distal |  | Korean | M | PB | 178/1872 | < 3.33 vs. ≥ 9.09 (Q4) | 0.53 (0.32-0.88) | 0.035\* |  | [25] |
| **Isoflavones** | **Genistein** | Colon, distal |  | Korean | F | PB | 113/894 | < 3.56 vs. ≥ 9.79 (Q4) | 1.35 (0.71-2.54) | 0.495 |  | [25] |
| **Isoflavones** | **Genistein** | Rectum |  | Korean | M | PB | 320/1872 | < 3.33 vs. ≥ 9.09 (Q4) | 0.92 (0.61-1.37) | 0.398 |  | [25] |
| **Isoflavones** | **Genistein** | Rectum |  | Korean | F | PB | 124/894 | < 3.56 vs. ≥ 9.79 (Q4) | 0.61 (0.35-1.16) | 0.044\* |  | [25] |
| **Isoflavones** | **Daidzein** |  | EPIC-Norfolk | English | M | PB | 125/504 |  | 1.14 (0.90-1.43) | 0.28 | 40-79 y | [23] |
| **Isoflavones** | **Daidzein** |  | EPIC-Norfolk | English | F | PB | 125/504 |  | 1.25 (0.96-1.65) | 0.10 | 40-79 y | [23] |
| **Isoflavones** | **Daidzein** |  |  | Korean | M | PB | 624/1872 | < 3.20 vs. ≥ 9.04 (Q4) | 0.77 (0.57-1.04) | 0.017\* |  | [25] |
| **Isoflavones** | **Daidzein** |  |  | Korean | F | PB | 298/894 | < 3.20 vs. ≥ 9.04 (Q4) | 0.80 (0.51-1.26) | 0.076 | Stronger insignificant inverse association for postmenopausal women than premenopausal women | [25] |
| **Isoflavones** | **Daidzein** | Colon, proximal |  | Korean | M | PB | 113/1872 | < 3.20 vs. ≥ 9.04 (Q4) | 1.27 (0.69-2.34) | 0.890 |  | [25] |
| **Isoflavones** | **Daidzein** | Colon, proximal |  | Korean | F | PB | 53/894 | < 3.38 vs. ≥ 9.89 (Q4) | 0.87 (0.33-2.32) | 0.346 |  | [25] |
| **Isoflavones** | **Daidzein** | Colon, distal |  | Korean | M | PB | 178/1872 | < 3.20 vs. ≥ 9.04 (Q4) | 0.41 (0.24-0.70) | 0.001\* |  | [25] |
| **Isoflavones** | **Daidzein** | Colon, distal |  | Korean | F | PB | 113/894 | < 3.38 vs. ≥ 9.89 (Q4) | 1.23 (0.64-2.35) | 0.960 |  | [25] |
| **Isoflavones** | **Daidzein** | Rectum |  | Korean | M | PB | 320/1872 | < 3.20 vs. ≥ 9.04 (Q4) | 0.88 (0.59-1.30) | 0.284 |  | [25] |
| **Isoflavones** | **Daidzein** | Rectum |  | Korean | F | PB | 124/894 | < 3.38 vs. ≥ 9.89 (Q4) | 0.59 (0.32-1.08) | 0.022\* |  | [25] |
| **Isoflavones** | **Biochanin A** |  | EPIC-Norfolk | English | M | PB | 125/504 |  | 0.98 (0.70-1.36) | 0.90 | 40-79 y | [23] |
| **Isoflavones** | **Biochanin A** |  | EPIC-Norfolk | English | F | PB | 94/379 |  | 0.68 (0.43-1.07) | 0.10 | 40-79 y | [23] |
| **Isoflavones** | **Formononetin** |  | EPIC-Norfolk | English | M | PB | 125/504 |  | 1.15 (0.87-1.51) | 0.33 | 40-79 y | [23] |
| **Isoflavones** | **Formononetin** |  | EPIC-Norfolk | English | F | PB | 94/379 |  | 1.32 (0.80-2.18) | 0.28 | 40-79 y | [23] |
| **Isoflavones** | **Glycitein** |  | EPIC-Norfolk | English | M | PB | 125/504 |  | 1.01 (0.74-1.38) | 0.96 | 40-79 y | [23] |
| **Isoflavones** | **Glycitein** |  | EPIC-Norfolk | English | F | PB | 94/379 |  | 1.09 (0.77-1.54) | 0.63 | 40-79 y | [23] |
| **Isoflavones** | **Glycitein** |  |  | Korean | M | PB | 624/1872 | < 0.85 vs. ≥ 2.21 (Q4) | 0.60 (0.44-0.83) | < 0.001\* |  | [25] |
| **Isoflavones** | **Glycitein** |  |  | Korean | F | PB | 298/894 | < 0.85 vs. ≥ 2.21 (Q4) | 0.47 (0.29-0.76) | 0.004\* | Inverse association only for postmenopausal [0.32 (0.17-0.60), p 0.001\*], not premenopausal women | [25] |
| **Isoflavones** | **Glycitein** | Colon, proximal |  | Korean | M | PB | 113/1872 | < 0.85 vs. ≥ 2.21 (Q4) | 1.48 (0.77-2.85) | 0.989 |  | [25] |
| **Isoflavones** | **Glycitein** | Colon, proximal |  | Korean | F | PB | 53/894 | < 0.93 vs. ≥ 2.44 (Q4) | 0.69 (0.26-1.83) | 0.420 |  | [25] |
| **Isoflavones** | **Glycitein** | Colon, distal |  | Korean | M | PB | 178/1872 | < 0.85 vs. ≥ 2.21 (Q4) | 0.40 (0.22-0.71) | 0.004\* |  | [25] |
| **Isoflavones** | **Glycitein** | Colon, distal |  | Korean | F | PB | 113/894 | < 0.93 vs. ≥ 2.44 (Q4) | 0.77 (0.40-1.48) | 0.433 |  | [25] |
| **Isoflavones** | **Glycitein** | Rectum |  | Korean | M | PB | 320/1872 | < 0.85 vs. ≥ 2.21 (Q4) | 0.53 (0.35-0.82) | 0.002\* |  | [25] |
| **Isoflavones** | **Glycitein** | Rectum |  | Korean | F | PB | 124/894 | < 0.93 vs. ≥ 2.44 (Q4) | 0.24 (0.11-0.54) | 0.001\* |  | [25] |
| **Isoflavones** | **Equol** |  | EPIC-Norfolk | English | M | PB | 125/504 |  | 0.81 (0.48-1.39) | 0.45 | 40-79 y | [23] |
| **Isoflavones** | **Equol** |  | EPIC-Norfolk | English | F | PB | 94/379 |  | 0.53 (0.24-1.16) | 0.11 | 40-79 y | [23] |
| **Anthocyanidins** |  |  |  | Italian | F, M | HB | 1953/4154 | 5.3 vs. 31.7 (upper cutpoint; Q5) | 0.67 (0.54-0.82) | <0.001\* | 19-74 y; no significant effect modification by age (< 60 y vs. ≥ 60 y) or BMI (< 25 or ≥ 25) | [21] |
| **Anthocyanidins** |  |  |  | Italian | M | HB | 1125/2073 | (Q5) | 0.90 (0.82-0.98) |  | 19-74 y | [21] |
| **Anthocyanidins** |  |  |  | Italian | F | HB | 828/2081 | (Q5) | 0.74 (0.62-0.88) |  | 19-74 y | [21] |
| **Anthocyanidins** |  |  | BCCS | Spanish | F, M | HB | 424/401 | < 3.3 vs. > 10.6/100 kcal (upper cutoff; Q4) | 0.75 (0.47-1.20) | 0.33 |  | [18] |
| **Anthocyanidins** |  |  |  | Chinese | F, M | HB | 1632/1632 | (Q4) | 0.80 (0.64-1.00) | 0.08 |  | [11] |
| **Anthocyanidins** |  |  |  | Chinese | M | HB | 910/910 | (Q4) | 0.66 (0.47-0.91) | <0.01\* |  | [11] |
| **Anthocyanidins** |  |  |  | Chinese | F | HB | 722/722 | (Q4) | 0.88 (0.63-1.22) | 0.77 |  | [11] |
| **Anthocyanidins** |  | Colon |  | Italian | F, M | HB | 1225/4154 | (Q5) | 0.69 (0.54-0.89) | \* | 19-74 y | [21] |
| **Anthocyanidins** |  | Colon | BCCS | Spanish | F, M | HB | 265/401 | (Q4) | 0.66 (0.39-1.11) | 0.21 |  | [18] |
| **Anthocyanidins** |  | Colon |  | Chinese | F, M | HB | 983/1632 | (Q4) | 0.77 (0.59-0.99) | 0.10 |  | [11] |
| **Anthocyanidins** |  | Rectum |  | Italian | F, M | HB | 728/4154 | (Q5) | 0.64 (0.48-0.86) | \* | 19-74 y | [21] |
| **Anthocyanidins** |  | Rectum | BCCS | Spanish | F, M | HB | 159/401 | (Q4) | 1.02 (0.54-1.94) | 0.87 |  | [18] |
| **Anthocyanidins** |  | Rectum |  | Chinese | F, M | HB | 649/1632 | (Q4) | 0.86 (0.64-1.16) | 0.26 |  | [11] |

aBCCS: The Bellvitge Colorectal Cancer Study; SOCCS: The Study of Colorectal Cancer in Scotland; EPIC: The European Prospective Investigation into Cancer and Nutrition; OFCCR: Population-based Ontario Familial Colorectal Cancer Registry; bF: Female; M: Male; cHB, Hospital-Based; PB: Population-Based; dQ4: Quartile; Q5: Quintile; T3: Tertile; eOR: Odds Ratio; fStatistically significant effects (p for trend < 0.05) are marked by asterisk; gBMI: Body Mass Index.