Supplementary Table 1. Risk for total and cause-specific mortality in men by the quartiles of types of sugar (Hazard ratios (HRs) and 95% confidence intervals)

Quartile 1 Quartile 2 Quartile 3 Quartile 4 P-trend

Total mortality

Glucose

Median, % of energy 0.9 1.4 1.9 2.9

No. of deaths 769 693 703 736

Multivariate HR\* 　 1.0 　 1.03 (0.93, 1.15) 1.04 (0.92, 1.17) 1.23 (1.09, 1.39) 　0.005

Fructose

Median, % of energy 0.9 1.4 2.1 3.4

No. of deaths 830 715 688 668

Multivariate HR\* 1.0 1.04 (0.94, 1.16) 1.03 (0.92, 1.15) 1.25 (1.10, 1.41) 0.0002

Sucrose

Median, % of energy 1.5 2.4 3.3 4.9

No. of deaths 645 667 732 857

Multivariate HR\* 1.0 1.01 (0.90, 1.13) 1.14 (1.01, 1.28) 1.26 (1.11, 1.43) <0.0001

Maltose

Median, % of energy 0.09 0.165 0.23 0.34

No. of deaths 666 698 695 842

Multivariate HR\* 1.0 1.21 (1.08, 1.35) 1.18 (1.05, 1.32) 1.21 (1.09, 1.36) 0.008

Lactose

Median, % of energy 0.2 0.6 1.3 2.4

No. of deaths 674 612 702 913

Multivariate HR\* 1.0 1.03 (0.92 1.16) 1.03 (0.92, 1.15) 1.09 (0.97, 1.22) 0.16

Added sugar

Median, % of energy 1.3 2.5 4.0 6.9

No. of deaths 770 735 704 692

Multivariate HR\* 1.0 1.03 (0.92, 1.14) 1.14 (1.02, 1.28) 1.22 (1.09, 1.37) 0.0002

Naturally occurring sugar†

Median, % of energy 2.4 3.7 4.9 7.1

No. of deaths 616 634 773 878

Multivariate HR\* 1.0 0.99 (0.88, 1.11) 1.07 (0.95, 1.20) 1.16 (1.01, 1.33) 0.01

Cancer mortality

Glucose

No. of deaths 289 234 226 225

Multivariate HR\* 1.0 0.88 (0.73, 1.05) 0.82 (0.68, 1.00) 0.92 (0.74, 1.15) 0.64

Fructose

No. of deaths 308 237 223 206

Multivariate HR\* 1.0 0.87 (0.73, 1.05) 0.84 (0.70, 1.02) 0.94 (0.76, 1.16) 0.76

Sucrose

No. of deaths 240 255 237 242

Multivariate HR\* 1.0 1.03 (0.86, 1.24) 0.96 (0.79, 1.17) 0.95 (0.76, 1.19) 0.53

Maltose

No. of deaths 222 233 233 286

Multivariate HR\* 1.0 1.20 (0.99, 1.45) 1.23 (1.01, 1.49) 1.36 (1.12, 1.65) 0.004

Lactose

No. of deaths 250 185 247 292

Multivariate HR\* 1.0 0.84 (0.69, 1.02) 1.00 (0.83, 1.20) 1.07 (0.88, 1.30) 0.15

Added sugar

No. of deaths 277 265 225 207

Multivariate HR\* 1.0 1.03 (0.86, 1.22) 1.02 (0.84, 1.23) 1.02 (0.83, 1.25) 0.93

Naturally occurring sugar†

No. of deaths 227 210 270 267

Multivariate HR\* 1.0 0.89 (0.74, 1.09) 1.05 (0.86, 1.28) 1.02 (0.81, 1.29) 0.59

Cardiovascular mortality

Glucose

No. of deaths 196 192 176 211

Multivariate HR\* 1.0 1.17 (0.95, 1.45) 1.06 (0.84, 1.33) 1.49 (1.17, 1.89) 0.01

Fructose

No. of deaths 219 193 173 190

Multivariate HR\* 1.0 1.08 (0.87, 1.33) 1.14 (0.92, 1.43) 1.31 (1.03, 1.67) 0.002

Sucrose

No. of deaths 173 157 199 246

Multivariate HR\* 1.0 0.90 (0.72, 1.13) 1.16 (0.92, 1.45) 1.35 (1.06, 1.72) 0.002

Maltose

No. of deaths 183 182 177 233

Multivariate HR\* 1.0 1.14 (0.92-1.40) 1.07 (0.86, 1.33) 1.15 (0.93, 1.42) 0.32

Lactose

No. of deaths 175 167 181 252

Multivariate HR\* 1.0 1.06 (0.86, 1.32) 1.00 (0.81, 1.25) 1.02 (0.82, 1.27) 0.97

Added sugar

No. of deaths 209 171 197 198

Multivariate HR\* 1.0 0.89 (0.72, 1.10) 1.21 (0.98, 1.50) 1.37 (1.10, 1.71) 0.0002

Naturally occurring sugar‡

No. of deaths 169 171 182 253

Multivariate HR\* 1.0 0.94 (0.75, 1.17) 0.84 (0.67, 1.07) 1.06 (0.82, 1.38) 0.45

Non-cancer, non-cardiovascular mortality

Glucose

No. of deaths 282 267 301 300

Multivariate HR\* 1.0 1.12 (0.94, 1.34) 1.27 (1.06, 1.53) 1.41 (1.15, 1.71) 0.005

Fructose

No. of deaths 301 285 292 272

Multivariate HR\* 1.0 1.18 (1.00, 1.40) 1.27 (1.06, 1.52) 1.46 (1.20, 1.77) 0.0002

Sucrose

No. of deaths 230 255 296 369

Multivariate HR\* 1.0 1.07 (0.89, 1.29) 1.31 (1.08, 1.58) 1.51 (1.24, 1.85) <0.0001

Maltose

No. of deaths 261 281 285 323

Multivariate HR\* 1.0 1.24 (1.05, 1.48) 1.22 (1.02, 1.45) 1.15 (0.96, 1.37) 0.42

Lactose

No. of deaths 248 259 274 369

Multivariate HR\* 1.0 1.20 (1.00, 1.43) 1.09 (0.91, 1.31) 1.16 (0.97, 1.40) 0.32

Added sugar

No. of deaths 283 298 282 287

Multivariate HR\* 1.0 1.12 (0.95, 1.33) 1.22 (1.02, 1.45) 1.32 (1.10, 1.59) 0.003

Naturally occurring sugar†

No. of deaths 218 253 321 358

Multivariate HR\* 1.0 1.13 (0.93, 1.36) 1.27 (1.05, 1.54) 1.40 (1.12, 1.74) 0.002

\*Adjusted for age, energy, height, BMI, physical activity, smoking status, alcoholic consumption, education, marrital status, histories of diabetes and hypertension, and intakes of fat, salt, dietary fiber, and coffee.

†Total sugars minus added sugars.

Supplementary Table 2. Risk for total and cause-specific mortality in women by the quartiles of types of sugar (Hazard ratios (HRs) and 95% confidence intervals)

Quartile 1 Quartile 2 Quartile 3 Quartile 4 P-trend

Total mortality

Glucose

Median, % of energy 1.2 1.8 2.3 3.2

No. of deaths 668 597 536 637

Multivariate HR\* 　 1.0 　 1.06 (0.94, 1.19) 0.99 (0.88, 1.13) 1.04 (0.92, 1.19) 　0.72

Fructose

Median, % of energy 1.2 1.8 2.4 3.5

No. of deaths 704 597 569 568

Multivariate HR\* 1.0 1.00 (0.90, 1.13) 1.01 (0.89, 1.14) 1.02 (0.90, 1.16) 0.72

Sucrose

Median, % of energy 2.4 3.6 4.6 6.3

No. of deaths 644 580 558 656

Multivariate HR\* 1.0 0.99 (0.88, 1.12) 1.01 (0.89, 1.14) 1.12 (0.99, 1.27) 0.06

Maltose

Median, % of energy x.4 1.1 1.9 .33

No. of deaths 672 676 706 847

Multivariate HR\* 1.0 0.97 (0.86, 1.08) 0.99 (0.88, 1.11) 0.97 (0.87, 1.09) 0.70

Lactose

Median, % of energy 0.4 1.1 1.9 3.1

No. of deaths 693 456 538 751

Multivariate HR\* 1.0 0.84 (0.75 0.95) 0.85 (0.75, 0.96) 0.98 (0.87, 1.10) 0.84

Added sugar

Median, % of energy 2.1 3.5 5.0 7.9

No. of deaths 770 735 704 692

Multivariate HR\* 1.0 1.09 (0.98, 1.23) 1.09 (0.97, 1.23) 1.15 (1.03, 1.29) 0.02

Naturally occurring sugar†

Median, % of energy 3.5 5.1 6.5 8.8

No. of deaths 659 666 726 850

Multivariate HR\* 1.0 0.92 (0.81, 1.04) 0.91 (0.80, 1.03) 0.94 (0.82, 1.09) 0.57

Cancer mortality

Glucose

No. of deaths 157 175 151 163

Multivariate HR\* 1.0 1.19 (0.95, 1.49) 1.01 (0.79, 1.29) 0.93 (0.72, 1.21) 0.27

Fructose

No. of deaths 158 171 164 153

Multivariate HR\* 1.0 1.19 (0.95, 1.48) 1.10 (0.87, 1.40) 0.97 (0.75, 1.26) 0.48

Sucrose

No. of deaths 158 148 155 185

Multivariate HR\* 1.0 0.98 (0.78, 1.23) 1.03 (0.81, 1.31) 1.16 (0.91, 1.48) 0.17

Maltose

No. of deaths x22 228 232 292

Multivariate HR\* 1.0 0.94 (0.76, 1.18) 0.97 (0.77, 1.22) 1.04 (0.83, 1.30) 0.64

Lactose

No. of deaths 179 1828 152 187

Multivariate HR\* 1.0 0.82 (0.65, 1.04) 0.86 (0.69, 1.09) 1.00 (0.79, 1.26) 0.72

Added sugar

No. of deaths 180 160 136 170

Multivariate HR\* 1.0 1.07 (0.86, 1.33) 0.93 (0.74, 1.17) 1.12 (0.90, 1.40) 0.41

Naturally occurring sugar†

No. of deaths 146 153 166 181

Multivariate HR\* 1.0 1.01 (0.79, 1.28) 1.07 (0.84, 1.37) 1.00 (0.75, 1.32) 0.97

Cardiovascular mortality

Glucose

No. of deaths 254 215 205 229

Multivariate HR\* 1.0 1.03 (0.85, 1.24) 1.05 (0.86, 1.29) 1.06 (0.86, 1.31) 0.58

Fructose

No. of deaths 275 222 204 202

Multivariate HR\* 1.0 0.96 (0.80, 1.16) 0.97 (0.80, 1.19) 1.03 (0.84, 1.27) 0.70

Sucrose

No. of deaths 254 210 207 232

Multivariate HR\* 1.0 0.89 (0.73, 1.08) 0.96 (0.78, 1.17) 1.03 (0.84, 1.27) 0.53

Maltose

No. of deaths x86 172 185 232

Multivariate HR\* 1.0 1.02 (0.85-1.22) 0.98 (0.81, 1.19) 0.90 (0.74, 1.09) 0.25

Lactose

No. of deaths 263 164 201 275

Multivariate HR\* 1.0 0.86 (0.70, 1.05) 0.86 (0.70, 1.05) 0.92 (0.76, 1.12) 0.58

Added sugar

No. of deaths 209 171 197 198

Multivariate HR\* 1.0 1.01 (0.84, 1.22) 1.12 (0.93, 1.36) 1.05 (0.87, 1.27) 0.52

Naturally occurring sugar‡

No. of deaths 293 193 205 212

Multivariate HR\* 1.0 0.92 (0.75, 1.11) 0.87 (0.70, 1.07) 0.86 (0.68, 1.09) 0.22

Non-cancer, non-cardiovascular mortality

Glucose

No. of deaths 257 206 180 245

Multivariate HR\* 1.0 1.00 (0.83, 1.22) 0.92 (0.74, 1.14) 1.10 (0.89, 1.35) 0.36

Fructose

No. of deaths 271 203 201 213

Multivariate HR\* 1.0 0.93 (0.77, 1.12) 0.97 (0.80, 1.19) 1.06 (0.86, 1.31) 0.43

Sucrose

No. of deaths 232 222 195 239

Multivariate HR\* 1.0 1.11 (0.92, 1.35) 1.03 (0.84, 1.27) 1.17 (0.95, 1.44) 0.21

Maltose

No. of deaths xx4 275 288 323

Multivariate HR\* 1.0 0.94 (0.78, 1.13) 1.02 (0.84, 1.23) 1.01 (0.84, 1.22) 0.78

Lactose

No. of deaths 251 164 185 288

Multivariate HR\* 1.0 0.84 (0.69, 1.03) 0.82 (0.67, 1.01) 1.01 (0.83, 1.22) 0.64

Added sugar

No. of deaths 260 202 195 231

Multivariate HR\* 1.0 1.22 (1.01, 1.47) 1.18 (0.97, 1.43) 1.28 (1.06, 1.54) 0.02

Naturally occurring sugar†

No. of deaths 232 204 190 262

Multivariate HR\* 1.0 0.84 (0.69, 1.03) 0.82 (0.66, 1.02) 0.97 (0.77, 1.22) 0.95

\*Adjusted for age, energy, height, BMI, physical activity, smoking status, alcoholic consumption, education, marrital status, histories of diabetes and hypertension, menopausal status and intakeof fat, salt, dietary fiber, and coffee.

†Total sugars minus added sugars.