評価対象論文リスト（要因：甘味飲料、アウトカム：糖尿病）

評価判定日：2024/6/28

①既存の系統的レビュー・メタ解析・統合解析

1	Meng Y, Li S, Khan J, Dai Z, Li C, Hu X, Shen Q, Xue Y. Sugar- and Artificially Sweetened Beverages Consumption Linked to Type 2 Diabetes, Cardiovascular Diseases, and All-Cause Mortality: A Systematic Review and Dose-Response Meta-Analysis of Prospective Cohort Studies. Nutrients. 2021 Jul 30;13(8):2636. doi: 10.3390/nu13082636. PMID: 34444794; PMCID: PMC8402166.
2	Neelakantan N, Park SH, Chen GC, van Dam RM. Sugar-sweetened beverage consumption, weight gain, and risk of type 2 diabetes and cardiovascular diseases in Asia: a systematic review. Nutr Rev. 2021 Dec 8;80(1):50-67. doi: 10.1093/nutrit/nuab010. PMID: 33855443.
3	Qin P, Li Q, Zhao Y, Chen Q, Sun X, Liu Y, Li H, Wang T, Chen X, Zhou Q, Guo C, Zhang D, Tian G, Liu D, Qie R, Han M, Huang S, Wu X, Li Y, Feng Y, Yang X, Hu F, Hu D, Zhang M. Sugar and artificially sweetened beverages and risk of obesity, type 2 diabetes mellitus, hypertension, and all-cause mortality: a dose-response meta-analysis of prospective cohort studies. Eur J Epidemiol. 2020 Jul;35(7):655-671. doi: 10.1007/s10654-020-00655-y. Epub 2020 Jun 11. PMID: 32529512.
4	Imamura F, O'Connor L, Ye Z, Mursu J, Hayashino Y, Bhupathiraju SN, Forouhi NG. Consumption of sugar sweetened beverages, artificially sweetened beverages, and fruit juice and incidence of type 2 diabetes: systematic review, meta-analysis, and estimation of population attributable fraction. BMJ. 2015 Jul 21;351:h3576. doi: 10.1136/bmj.h3576. PMID: 26199070; PMCID: PMC4510779.
5	Greenwood DC, Threapleton DE, Evans CE, Cleghorn CL, Nykjaer C, Woodhead C, Burley VJ. Association between sugar-sweetened and artificially sweetened soft drinks and type 2 diabetes: systematic review and dose-response meta-analysis of prospective studies. Br J Nutr. 2014 Sep 14;112(5):725-34. doi: 10.1017/S0007114514001329. Epub 2014
6	Xi B, Li S, Liu Z, Tian H, Yin X, Huai P, Tang W, Zhou D, Steffen LM. Intake of fruit juice and incidence of type 2 diabetes: a systematic review and meta-analysis. PLoS One. 2014 Mar 28;9(3):e93471. doi: 10.1371/journal.pone.0093471. PMID: 24682091; PMCID: PMC3969361.
7	Malik VS, Popkin BM, Bray GA, Després JP, Willett WC, Hu FB. Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes: a meta-analysis. Diabetes Care. 2010 Nov;33(11):2477-83. doi: 10.2337/dc10-1079. Epub 2010 Aug 6. PMID: 20693348; PMCID: PMC2963518.
8	Neuenschwander M, Ballon A, Weber KS, Norat T, Aune D, Schwingshackl L, Schlesinger S. Role of diet in type 2 diabetes incidence: umbrella review of meta-analyses of prospective observational studies. BMJ. 2019 Jul 3;366:l2368. doi: 10.1136/bmj.l2368. PMID: 31270064; PMCID: PMC6607211.
9	Bellou V, Belbasis L, Tzoulaki I, Evangelou E. Risk factors for type 2 diabetes mellitus: An exposure-wide umbrella review of meta-analyses. PLoS One. 2018 Mar 20;13(3):e0194127. doi: 10.1371/journal.pone.0194127. PMID: 29558518; PMCID: PMC5860745.
10	Schwingshackl L, Hoffmann G, Lampousi AM, Knüppel S, Iqbal K, Schwedhelm C, Bechthold A, Schlesinger S, Boeing H. Food groups and risk of type 2 diabetes mellitus: a systematic review and meta-analysis of prospective studies. Eur J Epidemiol. 2017 May;32(5):363-375. doi: 10.1007/s10654-017-0246-y. Epub 2017 Apr 10. PMID: 28397016;
11	Halvorsen RE, Elvestad M, Molin M, Aune D. Fruit and vegetable consumption and the risk of type 2 diabetes: a systematic review and dose-response meta-analysis of prospective studies. BMJ Nutr Prev Health. 2021 Jul 2;4(2):519-531. doi: 10.1136/bmjnph-2020-000218. PMID: 35028521; PMCID: PMC8718861.

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12	Sakurai M, Nakamura K, Miura K, Takamura T, Yoshita K, Nagasawa SY, Morikawa Y, Ishizaki M, Kido T, Naruse Y, Suwazono Y, Sasaki S, Nakagawa H. Sugar-sweetened beverage and diet soda consumption and the 7-year risk for type 2 diabetes mellitus in middle-aged Japanese men. Eur J Nutr. 2014 Feb;53(1):251-8. doi: 10.1007/s00394-013-0523-9. Epub 2013 Apr 11. PMID: 23575771.
13	Eshak ES, Iso H, Mizoue T, Inoue M, Noda M, Tsugane S. Soft drink, 100% fruit juice, and vegetable juice intakes and risk of diabetes mellitus. Clin Nutr. 2013 Apr;32(2):300-8. doi: 10.1016/j.clnu.2012.08.003. Epub 2012 Aug 13. PMID: 22917499.
14	Kanehara R, Goto A, Sawada N, Mizoue T, Noda M, Hida A, Iwasaki M, Tsugane S. Association between sugar and starch intakes and type 2 diabetes risk in middle-aged adults in a prospective cohort study. Eur J Clin Nutr. 2022 May;76(5):746-755. doi: 10.1038/s41430-021-01005-1. Epub 2021 Sep 20. PMID: 34545214.

Reference							
No	Author	Title	Year	Study location	Category	Relative risk (95% CI)	Magnitude of association
1	Meng, Y., et al	Sugar- and Artificially Sweetened Beverages Consumption Linked to Type 2 Diabetes, Cardiovascular Diseases, and All-Cause Mortality: A Systematic Review and Dose-Response Meta-Analysis of Prospective Cohort Studies.	2021	USA, Europe, Singapore, UK, Thailand, Sweden, France, Japan, Mexico	**SSB** (highest vs lowest) **SSB** (serving per day) North America Europe Asia **Artificial SB** (highest vs lowest) **Artificial SB** (serving per day) North America Europe Asia	1.29 (1.23, 1.34) 1.27 (1.15, 1.41) 1.28(1.21-1.35) 1.23(1.09-1.39) 1.41(1.14-1.74) 1.18 (1.08, 1.29) 1.13 (1.03, 1.25) 1.09 (1.04, 1.14) 1.25 (1.06, 1.47) 1.71 (1.11, 2.63)	↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑
2	Neelakantan, N., et al	Sugar-sweetened beverage consumption, weight gain, and risk of type 2 diabetes and cardiovascular diseases in Asia: a systematic review.	2021	Singapore, Thailand, Japan	SSB (highest vs lowest)	1.51 (1.15, 1.98)	↑
3	Qin, P., et al	Sugar and artificially sweetened beverages and risk of obesity, type 2 diabetes mellitus, hypertension, and all-cause mortality: a dose-response meta-analysis of prospective cohort studies.	2020	Spain, USA, Mexico, Thai, Japan, France, Finland, UK, Singapore Spain, USA, Danish, France, UK	SSB (highest vs lowest) SSB (per 250-mL/d increase) ASB (highest vs lowest) ASB (per 250-mL/d increase)	1.27 (1.18, 1.36) 1.19 (1.13, 1.25) 1.20 (1.05, 1.38) 1.15 (1.05, 1.26)	↑ ↑ ↑ ↑
4	Imamura, F., et al	Consumption of sugar sweetened beverages, artificially sweetened beverages, and fruit juice and incidence of type 2 diabetes: systematic review, meta-analysis, and estimation of population attributable fraction.	2015	Finland, USA, Japan, Europe, France, Singapore	SSB (250 mL/d) SSB (after adjustment of adiposity) Artificially SB (250 mL/d) Artificially SB (after adjustment of adiposity) Fruit Juices (250 mL/d) Fruit juices (after adjustment of adiposity)	1.18 (1.09, 1.28) 1.13 (1.02, 1.21) 1.25 (1.18, 1.33) 1.08 (1.02, 1.15) 1.05 (0.99, 1.11) 1.07 (1.01, 1.14)	↑ ↑ ↑ ↑ - ↑
5	Greenwood, DC., et al	Association between sugar-sweetened and artificially sweetened soft drinks and type 2 diabetes: systematic review and dose-response meta-	2014	USA, Some European countries （EPIC)	SSB 330 ml per d artificially SSB 330 ml per d	1.20 (1.12, 1.29) 1.13 (1.02, 1.25)	↑ ↑
6	Xi, B., et al	Intake of fruit juice and incidence of type 2 diabetes: a systematic review and meta-analysis.	2014	Finland, USA, Singapore, Japan, France	Sweetened fruit juice (highest vs. lowest category) 100% fruit juice (highest vs. lowest category) Overall (highest vs. lowest category)	1.28 (1.04, 1.59) 1.03 (0.91, 1.18) 1.14 (1.03, 1.27)	↑ - ↑
7	Malik, VS., et al	Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes: a meta-analysis.	2010	USA, US, Finland, Shingapore Chinese,	SSB intake (highest vs lowest)	1.26 (1.12, 1.41)	↑
8	Neuenschwander, M., et al	Role of diet in type 2 diabetes incidence: umbrella review of meta-analyses of prospective observational studies.	2019	This is an umbrella review of 53 meta-analyses.	SSB (per 1 serving/day) Artificially SB (per 1 s/d) Total fruit juice (>1 s/d vs 0) SS fruit juice (>1 s/d Vs 0) 100 % fruit juice (>2 s/d vs 0)	1.26 (1.11, 1.43) 1.24 (1.10, 1.39) 1.10 (1.01, 1.20) 1.28 (1.04, 1.58) 1.04 (0.89, 1.22)	↑ ↑ ↑ ↑ -
9	Bellou, V., et al	Risk factors for type 2 diabetes mellitus: An exposure-wide umbrella review of meta-analyses.	2018	This is an umbrella review of 86 meta-analyses.	SSB (per 1 s/d)	1.30 (1.21, 1.41)	↑
10	Schwingshackl, L., et al	Food groups and risk of type 2 diabetes mellitus: a systematic review and meta-analysis of prospective studies.	2017	USA, Europe, Japan, Finland, China			
11	Halvorsen, RE., et al	Fruit and vegetable consumption and the risk of type 2 diabetes: a systematic review and dose-response meta-analysis of prospective studies.	2021	Finland, USA, UK USA, Australia, Netherlands, Japan, France	Fruit drinks (highest vs. lowest) Fruit drinks (per 250 g/day) Fruit juice (highest vs. lowest) Fruit juice (per 250 g/day)	1.28 (1.07, 1.52) 1.13 (1.01, 1.27) 1.09 (1.02, 1.18) 1.08 (1.00, 1.16)	↑ ↑ ↑ ↑

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No	Author	Title	Year	Study period	Number of subjects	Source of subjects	Event followed	Number of incident cases or deaths	Participant's race	Category	Number among cases	Relative risk (95%CI)	P for trend	Confounding variables considered	Magnitude of association
12	Sakurai, M., et al	Sugar-sweetened beverage and diet soda consumption and the 7-year risk for type 2 diabetes mellitus in middle-aged Japanese men.	2014	2003 to 2010	2,037	Employees of a factory that produces zippers and aluminum sashes in Toyama Pre fecture, Japan	Diabetes	170	Japanese	**SSB** (rare/never) >rare/never but <1serving/week >=1serving/week to <1serving/day >=1 serving/day **Diet Soda** (rare/never) >rare/never but <1serving/week >=1serving/week to <1serving/day >=1 serving/day	55 19 72 24 124 16 28 2	Ref. 0.97 (0.57, 1.64) 1.11 (0.74, 1.66) 1.34 (0.72, 2.36) Ref. 1.14 (0.66, 1.95) 1.71 (1.11, 2.63) -	0.42 0.015	age, BMI, family history of diabetes, smoking, alcohol drinking,and habitual exercise, presence of hypertension, presence of dyslipidemia, receiving the diet treatment for chronic disease, total energy intake, and total fiber intake, consumption of sugar sweetened beverage (for diet soda),diet soda consumption (for sugar-sweetened beverage), fruit juice consumption,vegetable juice consumption, and coffee consumption.	– – – – – – ↑ –
13	Eshak, ES., et al	Soft drink, 100% fruit juice, and vegetable juice intakes and risk of diabetes mellitus.	2013	1990-1995 or 1990-2000	27,585 Japanese men and women	JPHC study	Incident of diabetes	598 during 5-year follow-up, and 824 during 10-year follow-up	Japanese	5-year incident diabetes Soft drink intake in men, rarely <=2 times/wk 3-4 times/wk Almost every day Soft drink intake in womrn, rarely <=2 times/wk 3-4 times/wk Almost everyday 10-year incident diabetes Soft drink intake in men, rarely <=2 times/wk 3-4 times/wk Almost every day Soft drink intake in women, rarely <=2 times/wk 3-4 times/wk Almost every day	197/6983 98/3789 32/1835 32/1247 132/11062 55/3787 23/1322 22/836 261/6155 121/3326 56/1597 44/1059 200/10121 83/3408 30/1198 27/721	Ref. 0.98 (0.76, 1.27) 0.79 (0.55, 1.13) 0.98 (0.64, 1.50) Ref. 1.20 (0.86, 1.67) 1.44 (0.90, 2.31) 2.10 (1.23, 3.59) Ref. 0.86 (0.68, 1.08) 0.83 (0.61, 1.12) 0.98 (0.68, 1.42) Ref. 1.15 (0.88, 1.51) 1.17 (0.78, 1.76) 1.79 (1.11, 2.89)	0.73 0.004 0.8 0.8	age, body mass index, family history of diabetes mellitus, education, occupation, smoking status, alcohol intake, history of hypertension, leisure-time physical activity, consumption of coffee, consumption of green tea, energy-adjusted intakes of dietary magnesium, calcium, vitamin D, rice and total dietary fiber, and total energy intake.	– – – – – – ↑ – – – – – – – – ↑
14	Kanehara, R., et al	Association between sugar and starch intakes and type 2 diabetes risk in middle-aged adults in a prospective cohort study.	2022	1995-2000 or 1998-2003	64,677 (27,797 men and 36,880 women)	JPHC Study	Incident of diabetes	1190 (690 men and 500 women) during the 5-year period	Japanese	Total sugar in men, lowest Second Third Highest Total sugar in women, lowest Second Third Highest	198/6949 173/6949 162/6950 157/6949 139/9220 126/9220 110/9220 125/9220	Ref. 0.93 (0.74, 1.16) 0.91 (0.71, 1.17) 0.91 (0.68, 1.21) Ref. 1.08 (0.83, 1.41) 1.02 (0.76, 1.37) 1.24 (0.91, 1.70)	0.57 0.17	Age, public health center area, occupation, family history of diabetes, history of hypertension, smoking status, alcohol consumption, physical activity, total energy intake, calcium, magnesium, vitamin D, Age, public health center area, occupation, family history of diabetes, history of hypertension, smoking status, alcohol consumption, physical activity, total energy intake, calcium, magnesium, vitamin D,	– – – – – – – –