**Table S1.** Studies excluded in the full-text review with reasons

|  |  |  |
| --- | --- | --- |
| **Reference** | **Name** | **Reason for exclusion** |
| Cummings *et al.* 2017(31) | Food-alcohol competition: As young females eat more food, do they drink less alcohol? | Not a study design of interest |
| Eiler *et al.* 2014(32) | The aperitif effect: Alcohol's effects on the brain's response to food aromas | Not published as a journal article |
| Eiler *et al.* 2015(33) | The aperitif effect: Alcohol's effects on the brain's response to food aromas in women | Not an intervention of interest |
| Kido *et al.* 2016(34) | Acute effects of traditional Japanese alcohol beverages on blood glucose and polysomnography levels in healthy subjects | Not an intervention of interest |
| Kirk 1997(35) | Possible factors affecting humans' self-control for food: Deprivation level, mood, and alcohol consumption | Not published as a journal article |
| Kokavec *et al.* 2011(36) | Red wine alters the glucose-insulin relationship when consumed alone after a meal | Not an intervention of interest |
| Morimoto-Kobayashi *et al.* 2016(37) | Matured hop extract reduces body fat in healthy overweight humans: a randomized, double-blind, placebo-controlled parallel group study | Not an intervention of interest |
| Polivy *et al.* 1976(38) | Effects of alcohol on eating behaviour: Influence of mood and perceived intoxication | Not an outcome of interest |
| Tremblay *et al.* 1996(30) | The hyperphagic effect of a high-fat diet and alcohol intake persists after control for energy density | Not an intervention of interest |

**Table S2.** Energy intake and food intake outcomes for all 22 included studies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reference**  | **Food energy intake**  | **Between group comparisons** | **Total energy intake**  | **Between group comparisons** |
|  | Beverage | Mean (kJ) | SD(kJ) |  | Beverage | Mean(kJ) | SD(kJ) |  |
| Buemann *et al.* 2002(29) | NR | NRNRNR |  | NR | Red wineLager beerCarbonated soft drink | NRNRNR |  | No significant difference in total energy intake between the three beverage conditions (p > 0.05) |
| Caton *et al.* 2004(41) | Lager (32 g alcohol)Lager (8 g alcohol)No-alcohol lager | 57864928NR | 9911245 | Energy intake was significantly higher following the 32 g alcohol lager by 17% than the 8 g alcohol lager (p < 0.05)Energy intake was higher following the 32 g alcohol lager than the no-alcohol lager by 9% (p = NR) | Lager (32 g alcohol)Lager (8 g alcohol)No-alcohol lager | 699054265580 | 99212461256 | Energy intake was significantly higher following the 32 g alcohol lager than both the 8 g alcohol lager (p < 0.001) and the no-alcohol lager conditions (p < 0.01) |
| Caton *et al.* 2005(40) | Grape juice with alcoholGrape juice | 20211609 | 15992 | Energy intake was significantly higher following the grape juice with alcohol than grape juice by 20% (p < 0.01) | Grape juice with alcoholGrape juice | 37112476 | 12192 | Energy intake was significantly higher following the grape juice with alcohol than grape juice by 33% (p < 0.001) |
| Caton *et al.* 2007(39) | Red wine (aperitif)Red wine (co-ingestion)No beverage | 643662545125 | 435417262 | Energy intake was significantly higher following either aperitif or co-ingestion than no beverage (p < 0.01 for comparisons)No significant differences between aperitif and co-ingestion (p = NS) | Red wine (aperitif)Red wine (co-ingestion)No beverage | 756473825125 | 434415262 | Energy intake was significantly higher following either aperitif or co-ingestion than no beverage (p < 0.0001 for comparisons) |
| Christiansen *et al.* 2016(48) | Vodka with diet lemonadeDiet lemonade | 667458 | 410259 | Energy intake was significantly higher following vodka with diet lemonade than with diet lemonade (p < 0.03) | Vodka with diet lemonadeDiet lemonade | 1361458 | 399259 | Energy intake was significantly higher following vodka with diet lemonade than with diet lemonade (p < 0.001) |
| Cordain *et al.* 1997\*(51) | NR |  |  | NR | Baseline consumptionPost-wine consumptionPost no-wine consumption | 121711083210774 | 967†853†845† | No significant difference between groups (p > 0.05) |
| Cordain *et al*. 2000\*(52) | NR |  |  | NR | Baseline consumptionPost-wine consumptionPost no-wine consumption | 736472937305 | 128912681983 | No significant difference between groups (p > 0.05) |
| Foltin *et al.* 1993\*(11) | Low energy alcohol with cranberry juiceHigh energy alcohol with cranberry juiceLow energy dextrose with cranberry juiceHigh energy dextrose with cranberry juiceNo-beverage | NRNRNRNR10627 |  | Energy intake was significantly lower following the high-energy alcohol beverage than no beverage (p < 0.03) No significant differences between the low-energy alcohol beverage and the no-beverage condition (p = NS) | Low energy alcohol with cranberry juiceHigh energy alcohol with cranberry juiceLow energy dextrose with cranberry juiceHigh energy dextrose with cranberry juiceNo-beverage | NRNRNRNRNR |  | Energy intake was significantly lower following the no beverage than both low-energy alcoholic beverage (p < 0.02) and high-energy alcohol (p < 0.009) No significant differences between the energy matched alcohol and dextrose beverages (p = NS) |
| Hetherington *et al.* 2001(42) | LagerNo-alcohol lagerNo beverage | 730164796365 | 442289334 | Energy intake was significantly higher following the lager than the no-alcohol lager by 822 kJ (p = 0.04)Energy intake was significantly higher following the lager than no beverage by 936 kJ (p = 0.01) | NR |  |  | NR |
| Hofmann *et al.* 2008(49) | Vodka with orange juiceOrange juice | 46‡35‡ | 22‡28‡ | Energy intake was significantly higher with vodka and orange juice than with orange juice (p < 0.05) | NR |  |  | NR |
| Hollister 1970.(28) Study 1 | Diet soft drink and alcoholDiet soft drink and marijuanaDiet soft drink and dextroamphetamineDiet soft drink and marijuana, cannaboids removed | 511 mL§731 mL§390 mL§503 mL§ | NRNRNRNR | No significant differences in milkshake intake between diet soft drink and alcohol and placebo of diet soft drink and marijuana, cannaboids removed (p = NR) | NR |  |  | NR |
| Hollister 1970.(28) Study 2 | Diet soft drink and alcoholDiet soft drink and marijuanaDiet soft drink and marijuana, cannaboids removed | 540 mL§777 mL§603 mL§ | NRNRNR | No significant differences in milkshake intake between diet soft drink and alcohol and placebo of diet soft drink and marijuana, cannaboids removed (p = NR) | NR |  |  | NR |
| Mattes 1996\*(43) | 5.0% beer2.9% beer0.1% beerColaCarbonated water | NRNRNRNRNR |  | Dietary energy consumption did not differ significantly on any test day between the five beverages (p = NR) | 5.0% beer2.9% beer0.1% beerColaCarbonated water | NRNRNRNRNR |  | Energy intake was significantly higher with the 5.0% beer compared with either the 0.1% beer or carbonated water (p = NR) |
| Ouwens *et al.* 2003(50) | Vodka and OJOJ | 40.09 g§39.00 g§ | NRNR | No significant differences between the vodka and OJ and OJ (p = NS) | NR |  |  | NR |
| Poppitt *et al.* 1996(12) | Gin and slimline tonicSlimline tonicMaltodextrin beverageWater | 2620298029302820 | 320†280†210†250† | No significant difference in energy intake following the four different beverages (p > 0.05) | Gin and slimline tonicSlimline tonicMaltodextrin beverageWater | 3530301036502820 | 320†280†210†250† | A significant difference in energy intake between the high-energy beverages and low-energy beverages (p < 0.05) |
| Rose *et al.* 2015(24) | Vodka and bar labVodka and sterile labDiet lemonade and bar labDiet lemonade and sterile lab | 1818160516081530 | 715833769687 | No significant effects of environment, drink, gender or interactions on food energy intake (p = NS) | Vodka and bar labVodka and sterile labDiet lemonade and bar labDiet lemonade and sterile lab | 3005275916081530 | 844924769687 | Energy intake was significantly higher with the alcohol conditions than the non-alcohol conditions (p = NR) |
| Schrieks *et al.* 2015(44) | Vodka and OJOJ and maltodextrin | 33603020 | 210†210† | Energy intake was significantly higher following vodka and OJ than OJ and maltodextrin by a mean of 340 kJ (110† kJ) (p = 0.004) | NR |  |  | NR |
| Tremblay *et al.* 1995\*(45) | Low-fat diet and beerHigh-fat diet and beerLow-fat diet and no-alcohol beerHigh-fat diet and no-alcohol beer | 1032111736994111749 | 3067275324272745 | Energy intake were significantly lower in both low-fat conditions than their corresponding high-fat conditions for energy intake (p < 0.05) No significant differences in energy intake between beer and no-alcohol beer conditions in their respective diet types (p > 0.05) | Low-fat diet and beerHigh-fat diet and beerLow-fat diet and no-alcohol beerHigh-fat diet and no-alcohol beer | 11996134101062712431 | 3067275324273175 | Energy intake was significantly higher with the low-fat diet beer condition than the low-fat diet no-alcohol beer (p < 0.05) High-fat conditions were significantly higher in energy intake than the low-fat conditions (p < 0.05)No significant differences between high-fat diet no-alcohol beer and high-fat diet beer conditions (p > 0.05)  |
| Westerterp-Platenga *et al*. 1999(46) | White wine or beerHigh-fat juice, high-protein juice or high-carbohydrate juiceWaterNo beverage | 35002700NRNR | 300200 | Energy intake was significantly higher following either white wine or beer than after the high-carbohydrate, high-protein or high-fat juices in the men (p < 0.001) and in the women (p < 0.001) Alcoholic beverages also did not significantly differ to the energy intake after water or no beverage in both genders (p = NS)Energy intake did not differ significantly between the 2 alcoholic beverage in both genders (p = NS) | White wine, beer, high-fat juice, high-protein juice or high-carbohydrate juice (men)White wine, beer, high-fat juice, high-protein juice or high-carbohydrate juice (women)Water or no beverage (men)Water or no beverage (women) | 4000ǀǀ4900ǀǀ3400ǀǀ4200ǀǀ33002700 | 300ǀǀ400ǀǀ200ǀǀ300ǀǀ300200 | Energy intake was significantly higher following either high-fat juice, high-protein juice, high-carbohydrate juice, beer or wine than water or no beverage (p < 0.001 for comparisons) |
| Yeomans *et al.* 1999(53) | Alcoholic carbonated apple beverageCarbonated apple juiceWater | 4152\*\*3387\*\*4092\*\* | 940\*\*1264\*\*1073\*\* | NR | Alcoholic carbonated apple beverageCarbonated apple juiceWater | 5253\*\*4487\*\*4220\*\* | 940\*\*1264\*\*1071\*\* | NR |
| Yeomans *et al*. 2002(54)  | LagerNo-alcohol lager with maltodextrinWater | 2396\*\*2055\*\*2315\*\* | 481\*\*622\*\*621\*\* | Energy intake was significantly higher following the lager than the no-alcohol lager with maltodextrin (p < 0.01) Energy intake was significantly higher following water than the no-alcohol lager with maltodextrin (p < 0.05)No significant difference between the water and alcohol preload conditions (p = NS) | LagerNo-alcohol lager with maltodextrinWater  | 5322\*\*4657\*\*4493\*\* | 934\*\*1206\*\*1204\*\* | NR |
| Yeomans 2010(47) | LagerCarbonated fruit juice with alcoholAlcohol-free lagerCarbonated fruit juice | 3611\*\*3929\*\*3134\*\*2636\*\* | 1268\*\*1661\*\*1360\*\*1079\*\* | Energy intake was significantly higher following an alcohol condition compared with a no-alcohol condition (p < 0.001)Energy intake was significantly higher following fruit juice with alcohol compared with fruit juice (p < 0.001) Energy intake was significantly higher following beer than with no-alcohol beer (p = 0.006)  | NR |  |  | NR |

SD, standard deviation; NR, not reported; NS, not significant; OJ, orange juice; RE, restrained eaters

\*Daily average energy intake was reported

† Standard error of the mean was reported

‡ Food energy intake mean and standard deviation calculated from food mass intake with nutrition information panel provided by corresponding author

§ Food mass or volume intake reported only

ǀǀ Minimum and maximum mean and standard deviation energy intake was reported

¶ Total energy intake values provided by corresponding authors

\*\* Food and total energy intake values calculated from raw data provided by corresponding author for meta-analyses

**Table S3.** Influence analysis using random-effects (DerSimonian-Laird) model for food energy intake

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Excluded study** | **Pooled ES** | **95% CI Lower Bound** | **95% CI Upper Bound** | **Cochran Q** | **p** | **I2** | **I2 (95% CI Lower Bound)** | **I2 (95% CI Upper Bound)** |
| Caton et al. 2004(41) | 358.03 | 169.29 | 546.77 | 74.12 | <0.001 | 83.81 | 73.74 | 90.02 |
| Caton et al. 2005(40) | 336.70 | 144.69 | 528.72 | 65.95 | <0.001 | 81.81 | 70.02 | 88.96 |
| Caton et al. 2007(39) | 302.50 | 126.18 | 478.81 | 63.28 | <0.001 | 81.04 | 68.58 | 88.55 |
| Christiansen et al. 2016(48) | 367.04 | 152.33 | 581.75 | 69.38 | <0.001 | 82.71 | 71.70 | 89.43 |
| Hetherington et al. 2001(42) | 321.19 | 138.49 | 503.89 | 69.32 | <0.001 | 82.69 | 71.67 | 89.42 |
| Hofmann et al. 2008(49) | 383.90 | 195.52 | 572.29 | 35.91 | <0.001 | 66.59 | 40.09 | 81.37 |
| Poppitt et al. 1996(12) | 380.30 | 191.05 | 569.54 | 72.99 | <0.001 | 83.56 | 73.28 | 89.88 |
| Rose et al. 2015 Bar Lab(24) | 356.66 | 161.97 | 551.34 | 73.06 | <0.001 | 83.57 | 73.31 | 89.89 |
| Rose et al. 2015 Sterile Lab(24) | 365.58 | 171.94 | 559.21 | 74.05 | <0.001 | 83.80 | 73.72 | 90.01 |
| Schrieks et al. 2016(44) | 344.50 | 152.82 | 536.18 | 71.68 | <0.001 | 83.26 | 72.73 | 89.72 |
| Yeomans et al. 1999(53) | 338.77 | 149.15 | 528.38 | 71.31 | <0.001 | 83.17 | 72.57 | 89.68 |
| Yeomans et al. 2002(54) | 360.29 | 160.34 | 560.23 | 72.04 | <0.001 | 83.34 | 72.88 | 89.77 |
| Yeomans 2010 Beer(47) | 332.49 | 143.69 | 521.29 | 69.25 | <0.001 | 82.67 | 71.64 | 89.41 |
| Yeomans 2010 Juice(47) | 259.80 | 105.37 | 414.24 | 43.68 | <0.001 | 72.53 | 52.08 | 84.25 |

**Table S4.** Influence analysis using random-effects (DerSimonian-Laird) model for total energy intake

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Excluded study** | **Pooled ES** | **95% CI Lower Bound** | **95% CI Upper Bound** | **Cochran Q** | **p** | **I2** | **I2 (95% CI Lower Bound)** | **I2 (95% CI Upper Bound)** |
| Caton et al. 2004(41) | 1105.04 | 841.90 | 1368.18 | 29.12 | <0.001 | 75.96 | 51.88 | 87.99 |
| Caton et al. 2005(40) | 1044.81 | 743.21 | 1346.41 | 26.38 | <0.001 | 73.47 | 45.99 | 86.97 |
| Caton et al. 2007(39) | 989.98 | 783.89 | 1196.07 | 17.31 | 0.02 | 59.57 | 11.89 | 81.44 |
| Christiansen et al. 2016(48) | 1102.90 | 794.84 | 1410.97 | 25.64 | <0.001 | 72.70 | 44.16 | 86.65 |
| Poppitt et al. 1996(12) | 1139.40 | 889.93 | 1388.88 | 24.86 | <0.001 | 71.84 | 42.09 | 86.30 |
| Rose et al. 2015 Bar Lab(24) | 1026.97 | 755.77 | 1298.17 | 27.20 | <0.001 | 74.26 | 47.88 | 87.29 |
| Rose et al. 2015 Sterile Lab(24) | 1052.29 | 774.49 | 1330.10 | 29.73 | <0.001 | 76.45 | 53.03 | 88.20 |
| Yeomans et al. 1999(53) | 1094.22 | 815.03 | 1373.40 | 29.92 | <0.001 | 76.60 | 53.39 | 88.26 |
| Yeomans et al. 2002(54) | 1109.48 | 838.09 | 1380.87 | 28.92 | <0.001 | 75.80 | 51.50 | 87.92 |

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| **Table S5.** Effective Public Health Practice Project Quality Appraisal Tool |
| **Reference** | **A–****Selection Bias** | **B** **– Study Design**  | **C** **- Confounders** | **D** **- Blinding** | **E –** **Data Collection Methods** | **F –** **Withdrawals and drop-outs** | **Global Rating**  |
| Buemann *et al.* 2002(29) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate  | 1 – Strong | 1 – Strong | Strong |
| Caton *et al.* 2004(41) | 2 – Moderate | 1 – Strong  | 1 - Strong | 2 – Moderate  | 1 – Strong | 1 – Strong | Strong |
| Caton *et al.* 2005(40) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate  | 1 – Strong | 1 – Strong | Strong |
| Caton *et al.* 2007(39) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate  | 1 – Strong  | 1 – Strong  | Strong |
| Christiansen *et al.* 2016(48) | 2 – Moderate | 1 – Strong  | 1 - Strong | 2 – Moderate  | 1 – Strong  | 1 – Strong | Strong |
| Cordain *et al.* 1997(51) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate  | 1 – Strong | 1 – Strong | Strong |
| Cordain *et al.* 2000(52) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate  | 1 – Strong | 1 – Strong | Strong |
| Foltin *et al.* 1993(11) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate  | 1 – Strong | 1 – Strong | Strong |
| Hetherington *et al.* 2001(42) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate  | 1 – Strong | 1 – Strong | Strong |
| Hofmann 2008(49) | 2 – Moderate | 1 – Strong  | 3 – Weak | 2 – Moderate  | 1 – Strong | 1 – Strong | Moderate |
| Hollister 1971 Study 1(28) | 2 – Moderate | 1 – Strong  | 1 – Strong | 1 – Strong | 3 – Weak | 1 – Strong | Moderate |
| Hollister 1971 Study 2(28) | 2 – Moderate | 1 – Strong  | 1 – Strong | 1 – Strong | 3 – Weak | 1 – Strong | Moderate |
| Mattes 1996(43) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate | 1 – Strong | 1 – Strong | Strong |
| Ouwens *et al.* 2003(50) | 2 – Moderate | 1 – Strong  | 3 – Weak | 2 – Moderate | 1 – Strong | 1 – Strong | Moderate |
| Poppitt *et al.* 1996(12) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate | 1 – Strong | 1 – Strong | Strong  |
| Rose *et al.* 2015(24) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate | 1 – Strong | 1 – Strong | Strong |
| Schrieks *et al.* 2015(44) | 2 – Moderate | 1 – Strong  | 1 – Strong  | 2 – Moderate  | 1 – Strong  | 1 – Strong  | Strong |
| Tremblay *et al.* 1995(45) | 2 – Moderate | 1 – Strong  | 1 – Strong  | 2 – Moderate | 1 – Strong | 1 – Strong  | Strong  |
| Westerterp-Plantenga *et al.* 1999(46) | 2 – Moderate | 1 – Strong  | 1 – Strong  | 2 – Moderate | 1 – Strong | 1 – Strong | Strong  |
| Yeomans *et al.* 1999(53) | 2 – Moderate | 1 – Strong  | 1 Strong | 2 – Moderate | 1 – Strong | 1 – Strong | Strong |
| Yeomans *et al.* 2002(54) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate | 1 – Strong | 1 – Strong | Strong |
| Yeomans 2010(47) | 2 – Moderate | 1 – Strong  | 1 – Strong | 2 – Moderate | 1 – Strong | 1 – Strong | Strong |