**Supplementary materials**

**SUPPLEMENTAL FIGURE S1** CONSORT 2010 checklist for reporting a randomized trial *

## CONSORT 2010 checklist of information to include when reporting a randomized trial*

| Section/Topic | Item No | Checklist item | Reported on page No |
|---|---|---|---|
| **Title and abstract** | | | |
| | 1a | Identification as a randomized trial in the title | 1 |
| | 1b | Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts) | 1 |
| **Introduction** | | | |
| Background and objectives | 2a | Scientific background and explanation of rationale | 1-2 |
| | 2b | Specific objectives or hypotheses | 2 |
| **Methods** | | | |
| Trial design | 3a | Description of trial design (such as parallel, factorial) including allocation ratio | 3 |
| | 3b | Important changes to methods after trial commencement (such as eligibility criteria), with reasons | NA |
| Participants | 4a | Eligibility criteria for participants | 3-4 |
| | 4b | Settings and locations where the data were collected | 3 |
| Interventions | 5 | The interventions for each group with sufficient details to allow replication, including how and when they were actually administered | 3-4 |
| Outcomes | 6a | Completely defined pre−specified primary and secondary outcome measures, including how and when they were assessed | 5-6 |
| | 6b | Any changes to trial outcomes after the trial commenced, with reasons | NA |

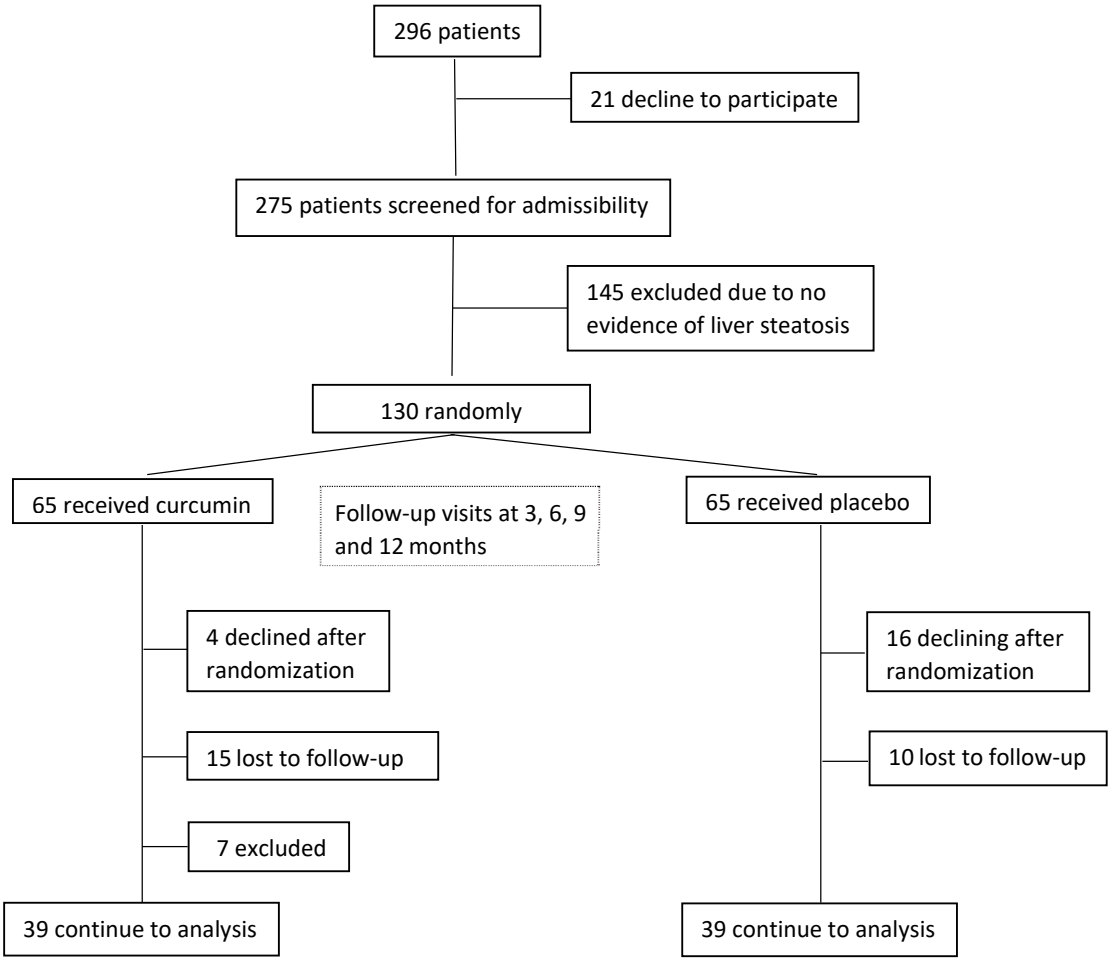
| | | | |
|---|---|---|---|
| Sample size | 7a | How sample size was determined | 6 |
| | 7b | When applicable, explanation of any interim analyses and stopping guidelines | NA |
| Randomization: | | | |
| Sequence generation | 8a | Method used to generate the random allocation sequence | 6 |
| | 8b | Type of randomization; details of any restriction (such as blocking and block size) | 6 |
| Allocation concealment mechanism | 9 | Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned | 6 |
| Implementation | 10 | Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions | 6 |
| Blinding | 11a | If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how | 6 |
| | 11b | If relevant, description of the similarity of interventions | NA |
| Statistical methods | 12a | Statistical methods used to compare groups for primary and secondary outcomes | 7 |
| | 12b | Methods for additional analyses, such as subgroup analyses and adjusted analyses | 7 |
| **Results** | | | |
| Participant flow (a diagram is strongly recommended) | 13a | For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analyzed for the primary outcome | 7 |
| | 13b | For each group, losses and exclusions after randomization, together with reasons | 7 |
| Recruitment | 14a | Dates defining the periods of recruitment and follow−up | NA |
| | 14b | Why the trial ended or was stopped | NA |
| Baseline data | 15 | A table showing baseline demographic and clinical characteristics for each group | 3-4 |

| | | | |
|---|---|---|---|
| Numbers analyzed | 16 | For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups | 7 |
| Outcomes and estimation | 17a | For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval) | 8-9 |
| | 17b | For binary outcomes, presentation of both absolute and relative effect sizes is recommended | NA |
| Ancillary analyses | 18 | Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre−specified from exploratory | 9 |
| Harms | 19 | All important harms or unintended effects in each group (for specific guidance see CONSORT for harms) | 15 |
| **Discussion** | | | |
| Limitations | 20 | Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses | 12-13 |
| Generalizability | 21 | Generalizability (external validity, applicability) of the trial findings | 13 |
| Interpretation | 22 | Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence | 10-13 |
| **Other information** | | | |
| Registration | 23 | Registration number and name of trial registry | 13 |
| Protocol | 24 | Where the full trial protocol can be accessed, if available | NA |
| Funding | 25 | Sources of funding and other support (such as supply of drugs), role of funders | 13 |

Citation: Schulz KF, Altman DG, Moher D, for the CONSORT Group. CONSORT 2010 Statement: updated guidelines for reporting parallel group randomised trials. BMC Medicine. 2010;8:18.

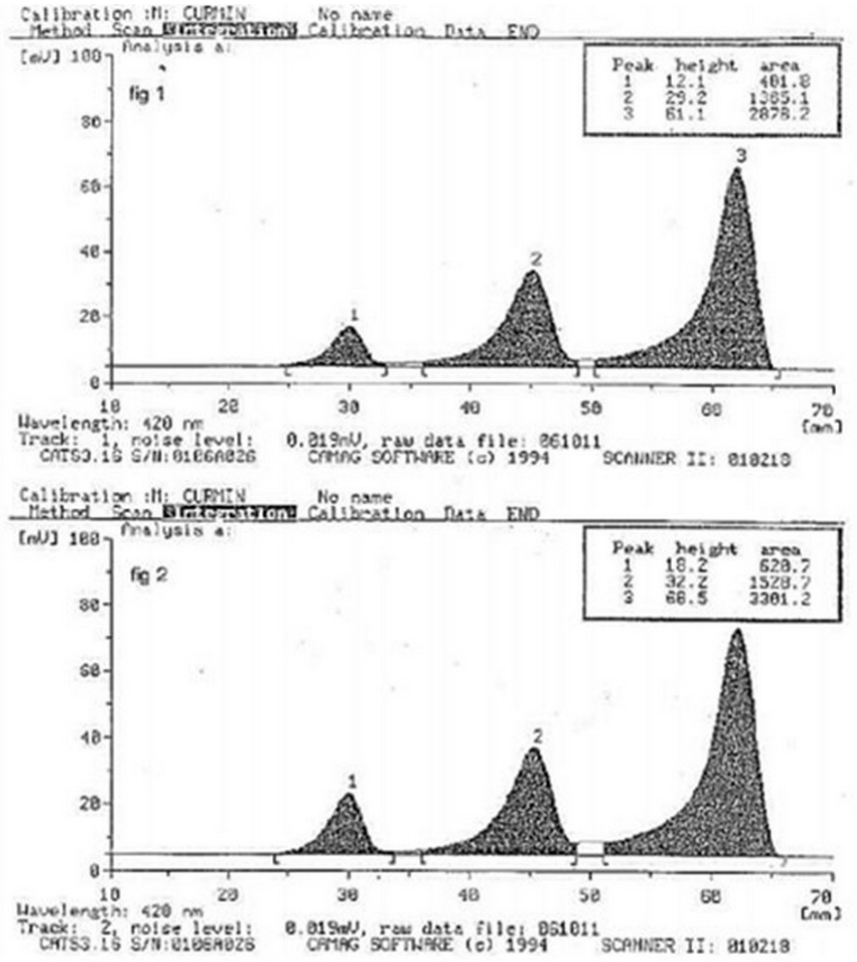

*We strongly recommend reading this statement in conjunction with the CONSORT 2010 Explanation and Elaboration for important clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non−inferiority and equivalence trials, non−pharmacological treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming: for those and for up−to−date references relevant to this checklist, see www.consort−statement.org.\

**SUPPLEMENTAL FIGURE S2** CONSORT flow diagram of participant enrollment and allocation



**SUPPLEMENTAL FIGURE S3** High−performance thin−layer chromatography profiles of curcuminoid extracts compared with standard curcuminoid chromatograms

The high−performance thin−layer chromatography (HPTLC) chromatogram of the Thai Government Pharmaceutical Organization (GPO) extracts is shown in figure 2, compared with HPTLC chromatogram of standard across curcumin (curcuminoids) in figure 1. In every batch of GPO curcuminoids extract, the peak ratio of curcumin to demethoxycurcumin to bisdemethoxycurcumin was controlled to be 1 to not more than 0.6 to not more than 0.4.



**SUPPLEMENTAL TABLE S1** Mean daily nutrient intake of participants at baseline and 12 months by group

| Daily intake of nutrients | Placebo (*n*=114) | | Curcumin (*n*=113) | | *P* value[2] |
|---|---|---|---|---|---|
| | Baseline[1] | 12 months | Baseline[1] | 12 months | |
| Energy (kcal/d) | 1857.60±110.97 | 1893.74±74.30 | 1864.21±87.98 | 1881.16±67.23 | 0.100 |
| Carbohydrate (% of energy) | 57.50±2.57 | 58.07±2.56 | 57.04±1.52 | 58.08±1.62 | 0.148 |
| Protein (% of energy) | 12.98±2.13 | 13.21±1.35 | 13.33±1.28 | 13.44±1.20 | 0.418 |
| FAT (% of energy) | 28.27±2.12 | 28.91±1.91 | 28.47±2.42 | 28.44±2.23 | 0.056 |
| Fiber (g/d) | 8.54±1.16 | 8.46±0.88 | 8.49±0.82 | 8.39±0.64 | 0.464 |

[1] All parameters are presented as means ±SDs. There are no significant differences between two groups at baseline for any variable by *t* test.

[2] The curcumin had no significant effect on mean daily intake of nutrients by one−factor ANCOVA with the baseline value as the covariate.

There were no significant differences in the daily mean−energy (energy, carbohydrate, protein, fat, and fiber) and nutrient intakes between the curcumin and placebo groups.

**SUPPLEMENTAL TABLE S2**. Sex−stratified linear regression analysis of curcumin effect on change in outcomes at 12 months

| ΔOutcomes[†] | Males | | | Females | | |
|---|---|---|---|---|---|---|
| | **β*** | **95% CI** | ***P*−value** | **β*** | **95% CI** | ***P*−value** |
| ΔTNF (pg./ml) | −2.76 | (−4.92, −0.60) | 0.014 | −3.90 | (−5.57, −2.22) | <0.001 |
| ΔIL1−β (pg/ml) | −0.63 | (−0.84, −0.42) | <0.001 | −0.73 | (−0.93, −0.53) | <0.001 |
| ΔIL−6 (pg/ml) | −7.06 | (−9.86, −4.25) | <0.001 | −10.2 | (−15.70, −4.62) | <0.001 |
| ΔGPx (U/l) | 6455 | (4540, −8370) | <0.001 | 7098 | (5645−8551) | <0.001 |
| ΔSOD (U/ml) | 163 | (123,202) | <0.001 | 137 | (112−162) | <0.001 |
| ΔMDA (μmol/l | −1.07 | (−1.62, 0.52) | <0.001 | −1.02 | (−1.47, −0.57) | <0.001 |
| TBF (%) | −3.27 | (−5.62, −0.92) | 0.007 | −3.41 | (−5.22, −1.32) | 0.001 |
| WC (cm) | −6.15 | (−9.04, −3.26) | 0.002 | −6.21 | (−10.8, −1.60) | 0.009 |
| NEFA(μmol/l) | −0.46 | (−0.72, −0.19) | 0.002 | −0.38 | (−0.66, −0.11) | 0.007 |
| BMI (kg/m$^2$) | −2.58 | (−4.46, 0.70) | 0.006 | −2.97 | (−4.74, −1.20) | 0.001 |
| Glucose (mg/dl) | −16.4 | (−28.35, −3.85) | 0.010 | −10.3 | (−20.4, −0.56) | 0.038 |
| HbA1C (%) | −0.95 | (−1.75, −0.15) | 0.020 | −0.46 | (−0.83, −0.08) | 0.017 |
| Liver stiffness (kPa) | −2.06 | (−3.69, −0.44) | 0.013 | −2.83 | (−4.71, 0.95) | 0.004 |
| CAP score (dB/m) | −72.5 | (−113.0, −32.3) | <0.001 | −63.6 | (−90.30, −36.80) | <0.001 |
| FLI | −32.8 | (−45.4, −20.2) | <0.001 | −25.7 | (−35.60, −15.8) | <0.001 |
| HSI | −8.70 | (−13.1, −4.28) | <0.001 | −8.32 | (−10.90, −5.74) | <0.001 |
| LAP | −26.1 | (−42.66, −9.55) | 0.002 | −24.1 | (−38.45, −9.75) | 0.001 |

[†] ΔOutcomes calculated as the difference between 12−month follow−up and baseline.

***** β (beta) represents the regression coefficient.

All models were adjusted for age.

BMI=body mass index; CAP=controlled attenuated parameter; GPx=glutathione peroxidase; FLI=Fatty liver index; HbA1C=glycated hemoglobin; HSI=Hepatic Steatosis Index; IL−1β = Interleukin−1 beta; IL−6=interleukin−6; IQR Interquartile range; LAP=Lip accumulation product; MDA=malondialdehyde; NEFA=non−esterified fatty acid SOD=superoxide dismutase; TBF= Total Body fat; TNF−α=tumor necrosis factor−alpha; WC = Waist circumference

**SUPPLEMENTAL TABLE S3**: Accuracy of blinding guesses by participants and onvestigators

| Group | Total Respondents | Correct Guesses | Accuracy (%) | *P*−value |
|---|---|---|---|---|
| Participants | 78 | 38 | 48.7% | 0.84 |
| Investigators | 78 | 41 | 52.6% | 0.73 |

*P*−values were calculated using a two−sided exact binomial test, assessing whether the proportion of correct guesses significantly deviated from the expected 50% under the null hypothesis of random guessing.

**SUPPLEMENTAL TABLE S4***:* Renal and hepatic adverse effects of curcumin and placebo at each follow−up visit

| Variables | Visits | Placebo | | Curcumin | | *P*−value |
|---|---|---|---|---|---|---|
| | | Mean (SEM) | Min−max | Mean (SEM) | Min−max | |
| Creatinine (mg/dL) | Baseline | 0.82 (0.03) | 0.42−1.67 | 0.85 (0.03) | 0.45−1.6 | 0.75 |
| | 3 months | 0.81 (0.02) | 0.41−1.78 | 0.91 (0.02) | 0.46−1.76 | 0.64 |
| | 6 months | 0.85 (0.02) | 0.45−1.89 | 0.92 (0.02) | 0.52−1.70 | 0.40 |
| | 9 months | 0.83 (0.03) | 0.44−1.86 | 0.91 (0.02) | 0.52−1.81 | 0.56 |
| | 12 months | 0.82 (0.02) | 0.41−1.72 | 0.85 (0.02) | 0.43−1.68 | 0.78 |
| AST (U/L) | Baseline | 25.31 (0.82) | 11−89 | 25.34 (0.80) | 13−67 | 0.58 |
| | 3 months | 22.39 (0.81) | 9−78 | 23.82 (0.88) | 11−92 | 0.07 |
| | 6 months | 23.42 (0.92) | 8−79 | 24.18 (0.98) | 10−89 | 0.43 |
| | 9 months | 23.69 (0.84) | 13−76 | 24.28 (0.89) | 12−87 | 0.76 |
| | 12 months | 23.01 (0.87) | 11−89 | 24.42(0.81) | 13−67 | 0.62 |
| ALT (U/L) | Baseline | 26.78 (1.26) | 5−121 | 28.09 (1.48) | 6−119 | 0.09 |
| | 3 months | 25.08 (1.19) | 6−114 | 26.49 (1.7) | 6−132 | 0.13 |
| | 6 months | 25.34 (1.15) | 7−110 | 26. 84 (1.64) | 7−132 | 0.21 |
| | 9 months | 25.67 (1.18) | 6−117 | 27.31 (1.80) | 6−127 | 0.34 |
| | 12 months | 26.38 (1.21) | 5−145 | 29.14 (1.67) | 6−123 | 0.29 |

ALT=alanine transaminase; AST=aspartate aminotransferase

**SUPPLEMENTAL TABLE S5** Capsule consumption per 3−month interval and daily intake at follow−up visits

| Consumption | Visit | Placebo | | Curcumin | | *P* value |
|---|---|---|---|---|---|---|
| | | Number of subjects who showed up | Number of capsules taken (mean, SEM) | Number of subjects who showed up | Number of capsules taken (mean, SEM) | |
| Consumption per 3 months | 3−month visit | 39 | 524.7 (54.59) | 39 | 527.4 (52.11) | 0.48 |
| | 6−month visit | 39 | 521.1 (21.61) | 39 | 526.5 (25.61) | 0.15 |
| | 9−month visit | 39 | 513.9 (20.32) | 39 | 514.8 (21.33) | 0.39 |
| | 12−month visit | 39 | 525.6 (20.82) | 39 | 528.3 (21.78) | 0.35 |
| Consumption per day | 3−month visit | 39 | 5.83 (0.60) | 39 | 5.86 (0.58) | 0.62 |
| | 6−month visit | 39 | 5.79 (0.23) | 39 | 5.85 (0.28) | 0.15 |
| | 9−month visit | 39 | 5.71 (0.22) | 39 | 5.72 (0.24) | 0.56 |
| | 12−month visit | 39 | 5.84 (0.22) | 39 | 5.87 (0.24) | 0.54 |