**Supplementary Appendix**

Effects of dietary supplementation on progression to type 2 diabetes in subjects with prediabetes: a single center randomized double-blind placebo-controlled trial

an interim analysis at 24 weeks

**Table S.1 Secondary outcomes**: at week 0, 12, 24 and differences from baseline

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Group** | **Wk 0** | | | **Wk 12** | | | **Wk 24** | | | **difference**  **wk 12 to Baseline** | | | **difference**  **wk 24 to Baseline** | | |
|  |  | Mean | SD | **P-value** | Mean | SD | **P-value** | Mean | SD | **P-value** | Mean | SD | **P-value** | Mean | SD | **P-value** |
| **FPG** | **PL (n=16)** | 102.56 | 12.09 | 0.623 | 100.38 | 20.49 | 0.089 | 103.31 | 13.71 | 0.349 | -2.19 | 13.03 | 0.186 | 0.75 | 9.56 | 0.652 |
|  | **CFD (n=14)** | 98.50 | 11.35 |  | 88.23 | 17.94 |  | 95.93 | 10.42 |  | -10.08 | 18.35 |  | -2.57 | 4.82 |  |
|  | **CF (n=15)** | 100.44 | 10.61 |  | 86.64 | 15.49 |  | 98.40 | 17.14 |  | -12.86 | 17.50 |  | -1.67 | 13.88 |  |
| **A1C** | **PL** | 5.89 | 0.39 | 0.435 | 5.82 | 0.31 | 0.859 | 5.91 | 0.36 | 0.945 | -0.06 | 0.30 | 0.443 | 0.02 | 0.25 | 0.362 |
|  | **CFD** | 5.87 | 0.44 |  | 5.88 | 0.42 |  | 5.92 | 0.46 |  | -0.02 | 0.21 |  | 0.08 | 0.25 |  |
|  | **CF** | 5.72 | 0.38 |  | 5.80 | 0.50 |  | 5.87 | 0.43 |  | 0.06 | 0.25 |  | 0.15 | 0.24 |  |
| **OGTT** | **PL** | 148.73 | 57.37 | 0.233 |  |  |  | 133.19 | 43.30 | 0.519 |  |  |  | -6.25 | 68.74 | 0.904 |
|  | **CFD** | 135.07 | 40.15 |  |  |  |  | 124.36 | 34.35 |  |  |  |  | -10.71 | 20.46 |  |
|  | **CF** | 121.06 | 32.30 |  |  |  |  | 116.67 | 40.92 |  |  |  |  | -2.80 | 36.24 |  |
| **LDL** | **PL** | 144.94 | 40.78 | 0.397 | 146.94 | 45.80 | 0.256 | 139.31 | 38.54 | 0.326 | 2.00 | 30.57 | 0.640 | -5.63 | 28.27 | 0.969 |
|  | **CFD** | 127.36 | 48.59 |  | 123.79 | 38.62 |  | 122.29 | 44.02 |  | -3.57 | 26.94 |  | -5.07 | 50.00 |  |
|  | **CF** | 128.25 | 30.58 |  | 131.43 | 28.42 |  | 119.87 | 33.91 |  | 5.93 | 20.63 |  | -8.27 | 30.88 |  |
| **TG** | **PL** | 132.94 | 85.36 | 0.528 | 123.00 | 57.42 | 0.392 | 130.94 | 52.96 | 0.969 | -9.94 | 39.63 | 0.902 | -2.00 | 53.84 | 0.177 |
|  | **CFD** | 166.71 | 131.02 |  | 160.71 | 108.98 |  | 129.64 | 80.51 |  | -6.00 | 66.80 |  | -37.07 | 75.79 |  |
|  | **CF** | 132.19 | 54.61 |  | 134.50 | 48.58 |  | 135.40 | 62.81 |  | -1.86 | 34.30 |  | -1.60 | 39.12 |  |
| **TC** | **PL** | 216.69 | 45.89 | 0.546 | 216.19 | 51.21 | 0.631 | 209.56 | 39.70 | 0.195 | -0.50 | 28.24 | 0.904 | -7.13 | 26.90 | 0.670 |
|  | **CFD** | 212.69 | 52.29 |  | 209.79 | 43.46 |  | 205.00 | 50.70 |  | -2.15 | 30.54 |  | -8.38 | 40.17 |  |
|  | **CF** | 200.19 | 32.61 |  | 200.57 | 35.77 |  | 182.47 | 39.58 |  | 2.43 | 21.32 |  | -17.80 | 39.21 |  |
| **HDL** | **PL** | 53.88 | 10.21 | 0.177 | 55.00 | 12.48 | 0.315 | 53.13 | 11.56 | 0.114 | 1.13 | 4.77 | 0.750 | -0.75 | 4.54 | 0.658 |
|  | **CFD** | 61.14 | 17.02 |  | 61.57 | 16.85 |  | 60.64 | 18.08 |  | 0.43 | 5.83 |  | -0.50 | 6.30 |  |
|  | **CF** | 52.88 | 10.91 |  | 54.00 | 13.18 |  | 49.93 | 11.14 |  | 2.00 | 5.86 |  | -2.27 | 6.12 |  |
| **Cr** | **PL** | 0.69 | 0.16 | 0.715 | 0.70 | 0.14 | 0.546 | 0.68 | 0.14 | 0.765 | 0.01 | 0.10 | 0.130 | -0.01 | 0.09 | 0.140 |
|  | **CFD** | 0.66 | 0.12 |  | 0.70 | 0.13 |  | 0.69 | 0.15 |  | 0.05 | 0.08 |  | 0.04 | 0.08 |  |
|  | **CF** | 0.70 | 0.15 |  | 0.65 | 0.13 |  | 0.66 | 0.12 |  | -0.01 | 0.05 |  | -0.02 | 0.06 |  |
| **AST** | **PL** | 26.25 | 13.33 | 0.603 | 24.44 | 8.88 | 0.073 | 22.47 | 8.72 | 0.874 | -1.81 | 7.99 | 0.891 | -3.40 | 6.84 | 0.480 |
|  | **CFD** | 23.79 | 8.51 |  | 21.43 | 5.20 |  | 21.14 | 4.80 |  | -2.36 | 5.43 |  | -2.64 | 5.67 |  |
|  | **CF** | 22.19 | 11.61 |  | 18.79 | 4.15 |  | 23.00 | 13.70 |  | -3.21 | 9.88 |  | 1.00 | 15.72 |  |
| **ALT** | **PL** | 34.81 | 31.49 | 0.231 | 32.81 | 24.28 | 0.051 | 27.93 | 18.44 | 0.614 | -2.00 | 10.25 | 0.929 | -6.20 | 16.21 | 0.349 |
|  | **CFD** | 23.57 | 14.10 |  | 21.71 | 9.65 |  | 22.86 | 9.83 |  | -1.86 | 8.27 |  | -0.71 | 8.48 |  |
|  | **CF** | 22.81 | 13.27 |  | 18.79 | 6.84 |  | 23.80 | 14.36 |  | -3.14 | 10.60 |  | 1.67 | 18.21 |  |
| **VITD** | **PL** | 23.99 | 6.40 | 0.751 | 23.06 | 7.35 | 0.236 | 22.48 | 6.41 | 0.732 | -1.14 | 3.86 | 0.075 | -1.51 | 4.32 | 0.098 |
|  | **CFD** | 24.23 | 10.56 |  | 28.45 | 12.84 |  | 23.47 | 9.24 |  | 2.69 | 4.24 |  | 2.32 | 5.28 |  |
|  | **CF** | 22.14 | 6.77 |  | 22.08 | 7.46 |  | 21.34 | 5.58 |  | 0.12 | 3.22 |  | -0.95 | 4.37 |  |
| **Hb** | **PL** | 13.50 | 0.92 | 0.957 | 13.63 | 1.23 | 0.519 | 13.62 | 1.33 | 0.419 | -0.08 | 0.44 | 0.629 | -0.10 | 0.44 | 0.180 |
|  | **CFD** | 13.44 | 0.87 |  | 13.21 | 0.99 |  | 13.18 | 0.90 |  | -0.23 | 0.64 |  | -0.45 | 0.61 |  |
|  | **CF** | 13.56 | 1.18 |  | 13.21 | 1.07 |  | 13.06 | 1.21 |  | -0.30 | 0.76 |  | -0.51 | 0.76 |  |
| **BW** | **PL** | 69.52 | 13.60 | 0.756 | 69.07 | 13.61 | 0.760 | 68.68 | 12.99 | 0.741 | -0.45 | 1.43 | 0.468 | -0.84 | 3.05 | 0.321 |
|  | **CFD** | 69.94 | 20.45 |  | 70.52 | 19.67 |  | 70.32 | 21.41 |  | 0.59 | 2.66 |  | 0.39 | 2.01 |  |
|  | **CF** | 73.54 | 15.50 |  | 73.40 | 15.84 |  | 73.40 | 16.49 |  | 0.15 | 2.66 |  | 0.15 | 1.75 |  |
| **BMI** | **PL** | 27.45 | 5.16 | 0.701 | 27.26 | 5.15 | 0.568 | 27.10 | 4.77 | 0.562 | -0.18 | 0.57 | 0.440 | -0.35 | 1.22 | 0.318 |
|  | **CFD** | 29.16 | 7.68 |  | 29.43 | 7.41 |  | 29.31 | 8.04 |  | 0.27 | 1.16 |  | 0.15 | 0.84 |  |
|  | **CF** | 28.80 | 4.77 |  | 28.94 | 4.85 |  | 28.93 | 5.10 |  | 0.06 | 1.05 |  | 0.05 | 0.70 |  |
| PL, placebo group; CFD, curcumin-fish oil-vitamin D group; CF, curcumin-fish oil group.  FPG, fasting plasma glucose; OGTT, 75-gram oral glucose tolerance test  A1C, hemoglobin A1C; LDL, LDL cholesterol, TG, triglycerides, TC, total cholesterol, HDL, HDL cholesterol  Cr, creatinine; AST, aspartate transaminase; ALT, alanine transaminase  VitD, vitamin D level; Hb, hemoglobin; BW, bodyweight(kg), BMI, body mass index | | | | | | | | | | | | | | | | |

**Table S.2 Secondary outcomes**: P-value of subgroup comparison; at week 0, 12, 24 and differences from baseline

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **variables** | **Multiple Comparisons by Bonferroni (p-value)** | | | | | | | | | | | | | | |
| **PL VS. CFD** | | | | | **PL VS. CF** | | | | | **CFD VS. CF** | | | | |
| **Wk 0** | **Wk 12** | **Wk 24** | **diff**  **wk 12 to 0** | **diff**  **wk 24 to 0** | **Wk 0** | **Wk 12** | **Wk 24** | **diff**  **wk 12 to 0** | **diff**  **wk 24 to 0** | **Wk 0** | **Wk 12** | **Wk 24** | **diff**  **wk 12 to 0** | **diff**  **wk 24 to 0** |
| **FBS** | 1 | 0.246 | 0.479 | 0.603 | 1 | 1 | 0.138 | 1 | 0.241 | 1 | 1 | 1 | 1 | 1 | 1 |
| **A1C** | 1 | 1 | 1 | 1 | 1 | 0.723 | 1 | 1 | 0.634 | 0.471 | 0.914 | 1 | 1 | 1 | 1 |
| **OGTT** | 1 |  | 1 |  | 1 | 0.27 |  | 0.768 |  | 1 | 1 |  | 1 |  | 1 |
| **LDL** | 0.718 | 0.329 | 0.715 | 1 | 1 | 0.742 | 0.839 | 0.515 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **TG** | 0.99 | 0.541 | 1 | 1 | 0.312 | 1 | 1 | 1 | 1 | 1 | 0.958 | 1 | 1 | 1 | 0.316 |
| **TC** | 1 | 1 | 1 | 1 | 1 | 0.876 | 1 | 0.268 | 1 | 1 | 1 | 1 | 0.508 | 1 | 1 |
| **HDL** | 0.39 | 0.641 | 0.432 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.258 | 0.499 | 0.128 | 1 | 1 |
| **BUN** | 0.915 | 0.056 | 0.05 | 0.98 | 0.564 | 1 | 1 | 0.693 | 1 | 0.577 | 1 | 0.022 | 0.623 | 0.888 | 1 |
| **Cr** | 1 | 1 | 1 | 0.57 | 0.45 | 1 | 1 | 1 | 1 | 1 | 1 | 0.983 | 1 | 0.142 | 0.168 |
| **GFR** | 1 | 0.586 | 1 | 0.574 | 1 | 1 | 0.33 | 0.23 | 1 | 0.802 | 0.64 | 0.02 | 0.201 | 0.351 | 1 |
| **AST** | 1 | 0.65 | 1 | 1 | 1 | 0.962 | 0.07 | 1 | 1 | 0.775 | 1 | 0.876 | 1 | 1 | 1 |
| **ALT** | 0.488 | 0.201 | 1 | 1 | 0.995 | 0.371 | 0.067 | 1 | 1 | 0.478 | 1 | 1 | 1 | 1 | 1 |
| **ALP** | 1 | 0.516 | 0.724 | 1 | 0.7 | 0.262 | 0.122 | 0.268 | 1 | 1 | 1 | 1 | 1 | 1 | 0.548 |
| **TB** | 0.735 | 0.249 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.167 | 1 | 1 | 1 |
| **DB** | 0.688 | 0.032 | 0.936 | 1 | 1 | 1 | 1 | 1 | 0.529 | 0.788 | 1 | 0.033 | 1 | 1 | 1 |
| **Ca** | 1 | 0.456 | 0.402 | 1 | 1 | 1 | 1 | 0.997 | 1 | 0.598 | 0.896 | 0.431 | 0.058 | 1 | 0.637 |
| **PO3** | 1 | 1 | 1 | 1 | 1 | 0.498 | 1 | 0.736 | 1 | 0.307 | 0.822 | 0.892 | 1 | 1 | 0.594 |
| **Mg** | 1 | 1 | 0.711 | 1 | 1 | 1 | 0.42 | 0.104 | 1 | 1 | 1 | 0.731 | 1 | 1 | 1 |
| **VITD** | 1 | 0.571 | 1 | 0.078 | 0.121 | 1 | 1 | 1 | 1 | 1 | 1 | 0.329 | 1 | 0.338 | 0.259 |
| **Alb** | 1 | 0.555 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.694 | 0.5 | 1 | 1 |
| **Hb** | 1 | 1 | 1 | 1 | 0.488 | 1 | 0.963 | 0.638 | 1 | 0.253 | 1 | 1 | 1 | 1 | 1 |
| **BW** | 1 | 1 | 1 | 0.675 | 0.489 | 1 | 1 | 1 | 1 | 0.743 | 1 | 1 | 1 | 1 | 1 |
| **BMI** | 1 | 0.955 | 0.972 | 0.614 | 0.48 | 1 | 1 | 1 | 1 | 0.746 | 1 | 1 | 1 | 1 | 1 |
| **QOLscore** | 1 |  | 1 |  | 1 | 1 |  | 1 |  | 1 | 1 |  | 1 |  | 1 |
| PL, placebo group; CFD, curcumin-fish oil-vitamin D group; CF, curcumin-fish oil group.  Diff, difference of; wk, week; FPG, fasting plasma glucose; OGTT, 75-gram oral glucose tolerance test; A1C, hemoglobin A1C.  LDL, LDL cholesterol; TG, triglycerides; TC, total cholesterol; HDL, HDL cholesterol; Cr, creatinine.  AST, aspartate transaminase; ALT, alanine transaminase; VitD, vitamin D level; Hb, hemoglobin; BW, bodyweight(kg), BMI, body mass index. | | | | | | | | | | | | | | | |

**Table S.3 Quality of life score**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Group** | **Wk 0** | | | **Wk 12** | | | **Wk 24** | | | **difference**  **wk 12 to Baseline** | | | **difference**  **wk 24 to Baseline** | | |
|  |  | Mean | SD | **P-value** | Mean | SD | **P-value** | Mean | SD | **P-value** | Mean | SD | **P-value** | Mean | SD | **P-value** |
| **QOL sc** | **PL (n=16)** | 82.06 | 11.89 | 0.935 | - | - | - | 82.75 | 12.04 | 0.981 | - | - | - | 0.69 | 3.68 | 0.709 |
|  | **CFD (n=14)** | 83.43 | 12.98 | - | - | - | 83.14 | 12.81 | - | - | - | -0.29 | 3.65 |
|  | **CF (n=15)** | 82.31 | 6.73 | - | - | - | 82.33 | 7.50 | - | - | - | 0.60 | 3.09 |
| PL, placebo group; CFD, curcumin-fish oil-vitamin D group; CF, curcumin-fish oil group.  QOL sc, WHO quality of life score: 21 – 130 points, Thai version. | | | | | | | | | | | | | | | | |

**Figure S1-3**

Glycemic status of each group at baseline and 24-week follow up