

Table 1: Proximate chemical composition, iron and vitamin C contents of date with and without hulls

| Variables | Moisture | Protein | Fat | Carbo- hydrates | Fiber | Ash | Fe | Vitamin C |
|----------------|------------------------|-----------------------|-------------------------|--------------------------|------------------------|------------------------|-------------------------|-------------------------|
| | | | | (%) | | | | (mg/100g) |
| Date with H | 475 ^a ±0.5 | 4.4 ^b ±0.1 | 0.93 ^b ±0.04 | 45.10 ^a ±0.61 | 15.3 ^a ±0.1 | 1.7 ^a ±0.04 | 7.19 ^a ±0.02 | 3.5 ^a ±0.04 |
| Date without H | 48.5 ^a ±0.5 | 4.8 ^a ±0.1 | 1.8 ^a ±0.10 | 44.26 ^a ±0.63 | 11.1 ^b ±0.1 | 1.3 ^b ±0.1 | 6.93 ^b ±0.08 | 3.18 ^b ±0.03 |
| LSD | 1.33 | 0.23 | 0.17 | 1.1 | 0.23 | 0.17 | 0.12 | 0.08 |

Data are presented as mean ± SD.

Table 2: Energy and dietary macronutrients intake of non-anemic and anemic children compared with DRI

| Variables | Non-anemic group | Anemic groups | | | LSD | DRI |
|-------------------|----------------------------|----------------------------|----------------------------|----------------------------|------|------|
| | | Positive control | Date with hulls | Date without hulls | | |
| Energy (k.cal) | 2294.74 ^a ±33.9 | 2287.98 ^a ±57.9 | 2279.64 ^a ±44.6 | 2287.8 ^a ±34.74 | 39.8 | 2279 |
| Protein (g/d) | 34.75 ^a ±0.27 | 23.98 ^c ±0.70 | 31.44 ^b ±0.89 | 30.89 ^b ±1.27 | 0.79 | 34 |
| Carbohydrate(g/d) | 454.35 ^a ±10.9 | 461.78 ^a ±13. 6 | 462.37 ^a ±14.1 | 453.08 ^a ±10.61 | 11.6 | - |
| Fat (g/d) | 38.1 ^{ab} ±1.8 | 37.87 ^{ab} ±5.9 | 34.46 ^b ±5.5 | 39.15 ^a ±2.3 | 3.9 | - |
| Fiber (g/d) | 34.85 ^a ±1.6 | 31. 57 ^b ±1.7 | 31.09 ^b ±1.3 | 33.66 ^a ±1.19 | 1.3 | 31 |

Means in the same row with different letters are significantly different ($p \leq 0.05$).

Table 3: Dietary vitamins and minerals intake of non-anemic and anemic children compared with DRI

| Variables | Non-anemic group | Anemic groups | | | LSD | DRI |
|------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------|------|
| | | Positive Control | Date with hulls | Date without hulls | | |
| Thiamin (mg/d) | 0.82 ^a ±0.015 | 0.62 ^b ±0.19 | 0.61 ^b ±0.02 | 0.61 ^b ±0.02 | 0.016 | 0.9 |
| Riboflavin(mg/d) | 1.04 ^a ±0.034 | 0.98 ^b ±0.003 | 0.99 ^b ±0.04 | 0.97 ^b ±0.024 | 0.03 | 0.9 |
| Vitamin A (µg/d) | 532.3 ^a ±22.5 | 259.4 ^b ±17.1 | 225.4 ^c ±9.9 | 203.3 ^d ±2.1 | 13.6 | 600 |
| Vitamin C(mg/d) | 55.23 ^a ±1.1 | 55.10 ^a ±1.2 | 55.58 ^a ±1.1 | 55.88 ^a ±1.3 | 1.05 | 45 |
| Vitamin E (µg/d) | 8.29 ^a ±0.34 | 6.13 ^c ±0.27 | 6.18 ^c ±0.24 | 7.05 ^b ±0.26 | 0.26 | 11 |
| Calcium (mg/d) | 983.50 ^a ±2.3 | 412.07 ^d ±10.5 | 432.87 ^c ±8.6 | 464.7 ^b ±30.97 | 15.4 | 1300 |
| Phosphorus(mg/d) | 898.65 ^b ±28.8 | 937.32 ^a ±9.7 | 951.11 ^a ±18.7 | 942.16 ^a ±9.4 | 16.75 | 1250 |
| Iron (mg/d) | 12.97 ^a ±0.25 | 5.96 ^b ±0.27 | 5.66 ^c ±0.19 | 5.76 ^{bc} ±0.21 | 0.21 | 8 |
| Zinc (mg/d) | 10.10 ^a ±0.17 | 6.29 ^b ±0.14 | 5.95 ^c ±0.14 | 6.17 ^{bc} ±0.43 | 0.226 | 8 |

Means in the same row with different letters are significantly different ($p \leq 0.05$).

Table 4: Anthropometric measurements of non-anemic and anemic children

| Variables | Non-anemic group | Anemic groups | | | LSD |
|-------------|-------------------------|-------------------------|-------------------------|-------------------------|------|
| | | Positive control | Date with hulls | Date without hulls | |
| Age (year) | 10.4 ^a ±0.6 | 10.2 ^a ±0.9 | 10.0 ^a ±0.8 | 10.0 ^a ±0.8 | 1.03 |
| Height (cm) | 143.6 ^a ±1.1 | 141.0 ^a ±1.7 | 141.6 ^a ±1.1 | 142.2 ^a ±1.9 | 3.03 |
| Weight (kg) | 44.1 ^b ±1.2 | 50.2 ^a ±1.3 | 42.8 ^b ±3.3 | 48.5 ^a ±2.6 | 2.04 |
| BMI | 21.39 ^b ±0.7 | 25.26 ^a ±1.1 | 21.33 ^b ±1.4 | 23.99 ^a ±1.1 | 1.46 |

Means in the same row with different letters are significantly different ($p \leq 0.05$).

BMI: Body mass index.

Table 5: Effect of black date on the hemoglobin, haematocrit, red blood cell and mean corpuscular volume of non-anemic and anemic children

| Variables | Time (week) | Non-anemic group | Anemic groups | | | LSD |
|---------------|-------------|--------------------------|--------------------------|--------------------------|--------------------------|------|
| | | | Positive control | Date with hulls | Date without hulls | |
| Hb (g/dl) | 0 | 13.48 ^a ±0.24 | 10.44 ^b ±0.23 | 10.62 ^b ±0.10 | 10.66 ^b ±0.18 | 0.37 |
| | 4 | 13.56 ^a ±0.11 | 10.26 ^d ±0.18 | 11.65 ^b ±0.25 | 11.94 ^b ±0.25 | 0.30 |
| | 8 | 13.42 ^a ±0.31 | 10.52 ^c ±0.19 | 12.62 ^b ±0.19 | 12.40 ^b ±1.11 | 0.27 |
| Ht (%) | 0 | 40.70 ^a ±0.29 | 31.34 ^b ±0.31 | 32.30 ^b ±0.66 | 32.32 ^b ±0.60 | 1.86 |
| | 4 | 40.38 ^a ±0.24 | 31.70 ^c ±1.23 | 34.58 ^b ±0.62 | 36.02 ^b ±0.82 | 1.87 |
| | 8 | 40.36 ^a ±0.42 | 31.98 ^d ±1.15 | 35.08 ^c ±0.82 | 37.50 ^b ±0.63 | 1.32 |
| RBC (ml /cmm) | 0 | 4.78 ^a ±0.05 | 4.26 ^b ±0.06 | 4.42 ^b ±0.07 | 4.32 ^b ±0.08 | 0.17 |
| | 4 | 4.88 ^a ±0.05 | 4.28 ^c ±0.08 | 4.43 ^b ±0.07 | 4.45 ^b ±0.09 | 0.15 |
| | 8 | 4.88 ^a ±0.08 | 4.48 ^b ±0.08 | 4.44 ^b ±0.09 | 4.55 ^b ±0.07 | 0.30 |
| MCV (fl) | 0 | 85.12 ^a ±0.15 | 73.58 ^b ±1.30 | 73.09 ^b ±1.73 | 74.18 ^b ±2.01 | 2.44 |
| | 4 | 83.16 ^a ±0.44 | 74.05 ^c ±1.89 | 79.19 ^b ±1.62 | 80.92 ^b ±2.06 | 1.88 |
| | 8 | 82.71 ^a ±0.61 | 71.37 ^b ±1.66 | 81.65 ^a ±0.79 | 82.36 ^a ±1.75 | 2.06 |
| MCH (fl) | 0 | 28.20 ^a ±0.35 | 24.51 ^b ±0.76 | 24.03 ^b ±0.53 | 24.47 ^b ±0.68 | 2.44 |
| | 4 | 27.93 ^a ±0.35 | 23.97 ^d ±0.19 | 26.05 ^b ±0.18 | 26.83 ^b ±0.75 | 1.88 |
| | 8 | 27.51 ^a ±0.91 | 23.48 ^c ±0.12 | 29.77 ^b ±0.63 | 27.23 ^b ±0.47 | 2.06 |

Means in the same row with different letters are significantly different ($p \leq 0.05$).

HB: Hemoglobin; Ht: Haematocrit; RBC: Red blood cell; MCV: Mean corpuscular volume and MCH: mean corpuscular hemoglobin.

Table 6: Effect of black date on serum iron, serum ferritin, total iron binding capacity and transferrin saturation of non-anemic and anemic children

| Variables | Time (week) | Non-anemic group | Anemic groups | | | LSD |
|--------------------|-------------|--------------------------|--------------------------|--------------------------|--------------------------|------|
| | | | Positive control | Date with hulls | Date without hulls | |
| SI (μ g/dl) | 0 | 64.60 ^a ±0.91 | 37.38 ^d ±0.57 | 39.14 ^b ±0.68 | 39.02 ^b ±1.31 | 1.2 |
| | 4 | 63.00 ^a ±1.26 | 39.08 ^d ±0.32 | 43.06 ^c ±0.72 | 46.84 ^b ±1.48 | 1.4 |
| | 8 | 67.84 ^a ±0.96 | 41.24 ^d ±0.61 | 60.30 ^c ±1.03 | 64.66 ^b ±1.42 | 1.4 |
| SF (μ g/dl) | 0 | 50.70 ^a ±1.55 | 26.13 ^b ±1.53 | 26.54 ^b ±1.54 | 27.12 ^b ±1.78 | 2.15 |
| | 4 | 51.82 ^a ±1.6 | 26.39 ^c ±1.55 | 31.85 ^b ±1.86 | 32.79 ^b ±1.67 | 2.33 |
| | 8 | 51.71 ^a ±1.55 | 26.65 ^c ±1.56 | 38.22 ^b ±2.12 | 50.88 ^a ±1.14 | 2.33 |
| TIBC (μ g/dl) | 0 | 228.24 ^d ± 2 | 251.86 ^a ±1.5 | 242.54 ^c ±2.1 | 245.82 ^b ±1.4 | 2.40 |
| | 4 | 235.12 ^d ±1.8 | 254.38 ^a ±1.5 | 240.10 ^c ±2.2 | 243.38 ^b ±1.3 | 2.40 |
| | 8 | 232.61 ^d ±1.8 | 252.60 ^a ±2.1 | 238.80 ^c ±2.2 | 242.00 ^b ±1.5 | 2.62 |
| TS (%) | 0 | 28.28 ^a ±0.31 | 14.84 ^c ±0.21 | 16.12 ^b ±0.25 | 15.86 ^b ±0.5 | 0.44 |
| | 4 | 26.80 ^a ±0.42 | 15.36 ^d ±1.1 | 17.90 ^c ±0.53 | 19.26 ^b ±0.50 | 0.95 |
| | 8 | 29.17 ^a ±0.34 | 16.33 ^d ±0.24 | 25.25 ^c ±0.36 | 26.72 ^b ±0.62 | 0.54 |

Means in the same row with different letters are significantly different ($p \leq 0.05$).

SI: Serum iron, SF: Serum ferritin, TIBC: Total iron binding capacity, TS: Transferrin saturation.