**Supplementary Table 1.** Body weight results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Control | OVX | ΟVX+OE | Overall p-value |
| Baseline | 300.01±24.00 | 315.90±37.07 | 319.00±15.68 | 0.183 |
| Month 1 | 302.25±25.98 | 322.20±40.91 | 328.40±15.86 | 0.083 |
| Month 2 | 318.38±30.89 | 342.80±50.68 | 352.60±19.43 | 0.056 |
| Month 3 | 326.63±38.85 | 352.10±58.91 | 365.10±22.43 | 0.084 |
| Month 4 | 332.00±46.73 | 367.10±55.55 | 383.10±21.89\* | **0.045** |
| Month 5 | 341.00±44.61 | 375.20±58.07 | 391.80±23.07\* | **0.039** |
| End of study | 338.38±36.32 | 383.40±62.21 | 400.90±25.60\* | **0.004** |

All values are presented as mean±SD.

Abbreviations: OVX: ovariectomy; OE: table olive wastewater extract.

Pairwise comparisons: \*p<0.05 vs Control,

OVX vs OVX+OE: All p-values are non-significant (p>0.05).

**Supplementary Table 2**. Plasma biochemical parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Control | OVX | ΟVX+OE | Overall p-value |
| ALT (u/l) | 40.91±11.69 | 54.94±19.32 | 60.41±28.34 | 0.083 |
| GGT (u/l) | 1.07±0.51 | 0.99±1.00 | 1.89±1.68 | 0.444 |
| Total Cholesterol (mg/dl) | 101.81±21.49 | 108.64±10.42 | 114.35±35.06 | 0.624 |
| HDL (mg/dl) | 64.48±13.75 | 69.36±6.84 | 67.91±19.97 | 0.776 |
| LDL (mg/dl) | 9.68±3.57 | 9.20±2.02 | 10.49±3.11 | 0.614 |
| Calcium (mg/dl) | 9.56±1.04 | 9.54±1.58 | 7.87±2.23 | 0.065 |
| Phosphorus (mg/dl) | 6.32±2.81 | 6.09±2.59 | 6.54±2.14 | 0.923 |

All values are presented as mean±SD.

Abbreviations: OVX: ovariectomy; OE: table olive wastewater extract.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Max Load (Ν) | Εnergy (mJ) | Robustness (Ν/mm) |
| Group | Right femur | Left femur | Right femur | Left femur | Right femur | Left femur |
| Control | 116.18±18.30 | 122.47±18.09 | 25.99±8.89 | 29.89±9.02 | 307.87±38.34 | 306.63±48.90 |
| OVX | 120.86±22.21 | 111.92±11.25 | 28.69±7.10 | 27.55±7.57 | 297.56±42.21 | 271.19±21.45 |
| OVX+OE | 118.71±11.53 | 113.97±18.00 | 27.56±3.98 | 30.17±7.93 | 290.05±34.92 | 271.77±44.85 |
| Overall p-value | p=0.860 | p=0.361 | p=0.707 | p=0.740 | p=0.628 | p=0.147 |

**Supplementary Table 3**. Biomechanical strength results

All values are presented as mean±SD.

Abbreviations: OVX: ovariectomy; OE: table olive wastewater extract.