Supplementary Table 1.
The primers used for fecal bacteria-related 16S rRNA genes sequences.

Target	primer sequence (5'-3')
Total bacteria-F	GTGSTGCAYGGYTGTCGTCA
Total bacteria-R	ACGTCRTCCMCACCTTCCTC
Lactiplantibacillus plantarum-F	GCAGCTACCTTCGAAGAATCCA
Lactiplantibacillus plantarum-R	GGGAAACTTGGTTCAGCAACA
Lactobacillus-F	AGCAGTAGGGAATCTTCCA
Lactobacillus-R	CACCGCTACACATGGAG
Bifidobacterium-F	CGCGTCYGGTGTGAAAG
Bifidobacterium-R	CCCCACATCCAGCATCCA
Akkemansia muciniphila-F	CAGCACGTGAAGGTGGGGAC
Akkemansia muciniphila-R	CCTTGCGGTTGGCTTCAGAT
Bacteroidetes-F	CTGAACCAGCCAAGTAGCG
Bacteroidetes-R	CCGCAAACTTTCACAACTGACTTA
Firmicutes-F	TGAAACTCAAAGGAATTGACG
Firmicutes-R	ACCATGCACCACCTGTC
Lachnospiraceae-F	CGTCGCAAACGCATTAAGTA
Lachnospiraceae-R	TAAGGTTCTTCGCGTTGCTT

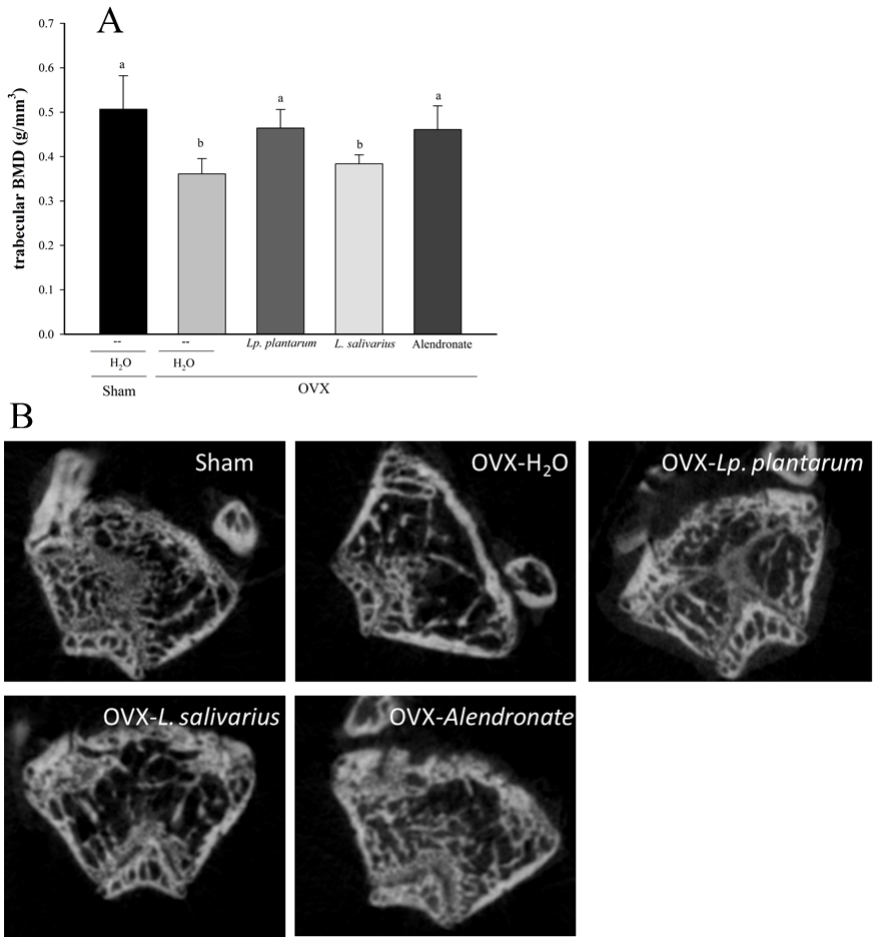
Supplementary Table 2. The sequence of primers used for osteoimmune- and osteoporosis-related genes expression.

Target	primer sequence (5'-3')
GAPDH -F	GCACAGTCAAGGCCGAGAAT
GAPDH-R	GCCTTCTCCATGGTGGTGAA
IL-10-F	CCTGGCAAACAAAATGAGGT
IL-10-R	TGCGTGTGTAGGCAGTCTTC
IL-1β-F	GCAATGGTCGGGACATAGTT
IL-1β-R	AGACCTGACTTGGCAGAGGA
IL-6-F	TCTCTCCGCAAGAGACTTCCA
IL-6-R	ATACTGGTCTGTTGTGGGTGG
TNFα-F	ACCACGCTCTTCTGTCTACTG
TNFα-R	CTTGGTGGTTTGCTACGAC
TGF-β -F	GCTCCATACAGTCCCAGGTG
TGF-β -R	GTTCTGCAAGCGAAAGACCC
Osteoprotegerin (OPG)-F	GGACGTCAGCTCTTGTGTGA
Osteoprotegerin (OPG)-R	GCATTCATCACTCGTGTGCC
RANKL-F	CAGGTGTAAGGTTTTCTGTGC
RANKL-R	AGCACCAGTTAAATACATCTTGACA

Supplementary Table 3. The Uterine weight in Sham and ovariectomized (OVX) rats treated with *Lp. plantarum* or alendronate.

	Uterine weight (g)					
	Sham + H_2O	OVX + H_2O	OVX + *Lp. plantarum* 2.07×10^8 CFU/kg	OVX + *Lp. plantarum* 4.13×10^8 CFU/kg	OVX + *Lp. plantarum* 8.27×10^8 CFU/kg	OVX + Alendronate 2.5 mg/kg
0	0.58 ± 0.06^a	0.37 ± 0.03^b	0.38 ± 0.03^b	0.37 ± 0.02^b	0.38 ± 0.02^b	0.38 ± 0.04^b

Results are expressed as the mean ± SD (n = 10). Values not sharing a common superscript (a, b) differed significantly (Duncan's multiple range test) ($p < 0.05$).



Supplementary Figure 1. Bone analysis of the femurs prepared from Sham and OVX mice treated with H2O, *Lp. plantarum* GMNL-662, *L. salivarius amd Alendronate* for 4 weeks. (A) micro-CT data of trabecular bone mineral density (trabecular BMD, mg/mm^3). (B) micro-CT image of the femur. Results are expressed as the mean ± SD (n = 10). Values not sharing a common superscript (a, b) differed significantly (Duncan's multiple range test) ($p < 0.05$).