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Roles of Long Non-coding Ribonucleic Acid X Inactive Specific Transcript/microRNA-29a/phosphatase and Tensin Homolog Deleted on Chromosome Ten Pathway in Osteogenic Differentiation of Bone Marrow Mesenchymal Stem Cells and Postmenopausal Osteoporosis

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KEYWORDS Bone Marrow Mesenchymal Stem Cell, Long Non-coding Ribonucleic Acid, MicroRNA, Postmenopausal Osteoporosis

ABSTRACT The researchers aimed to inquire into the roles of long non-coding ribonucleic acid X inactive specific transcript/microRNA-29a/phosphatase and tensin homolog deleted on chromosome ten (lncRNA-XIST/miR-29a/PTEN) pathway in the osteogenic differentiation of bone marrow mesenchymal stem cells (BMSCs) and postmenopausal osteoporosis (PMOP). In the miR-29a + Lenti-NC group, ALP activity, concentration of alizarin red, and mRNA and protein expressions of Runx2, OPN and OCN significantly increased, whereas the mRNA and protein expressions of LPL, AP-2 and leptin decreased ($P<0.05$). In contrast with the miR-29a + Lenti-NC group, miR-29a + Lenti-XIST and miR-29a + Lenti-PTEN groups had decreased ALP activity, concentration of alizarin red, and mRNA and protein expressions of Runx2, OPN and OCN, but increased mRNA and protein expressions of LPL, AP-2 and leptin ($P<0.05$). BMSCs have incremental expressions of lncRNA-XIST and PTEN and a declined expression of miR-29a. LncRNA-XIST suppresses the osteogenic differentiation of BMSCs by feat of the miR-29a/PTEN pathway.