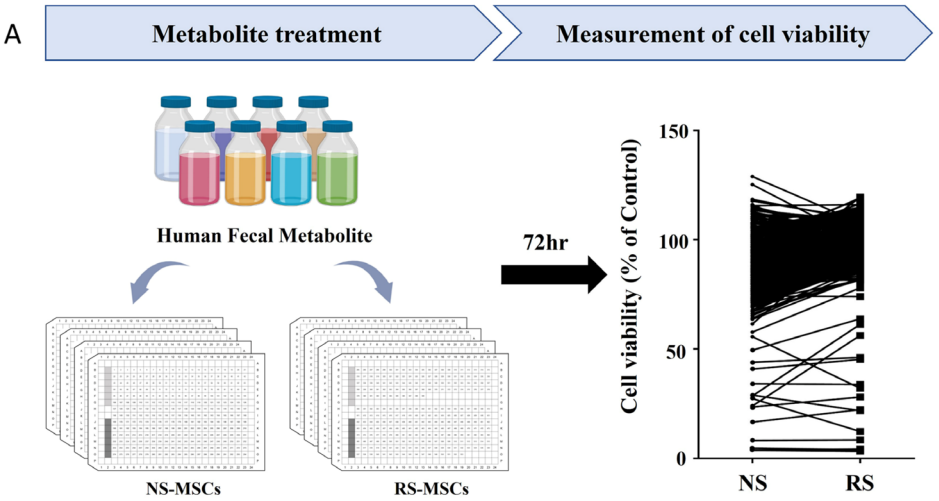
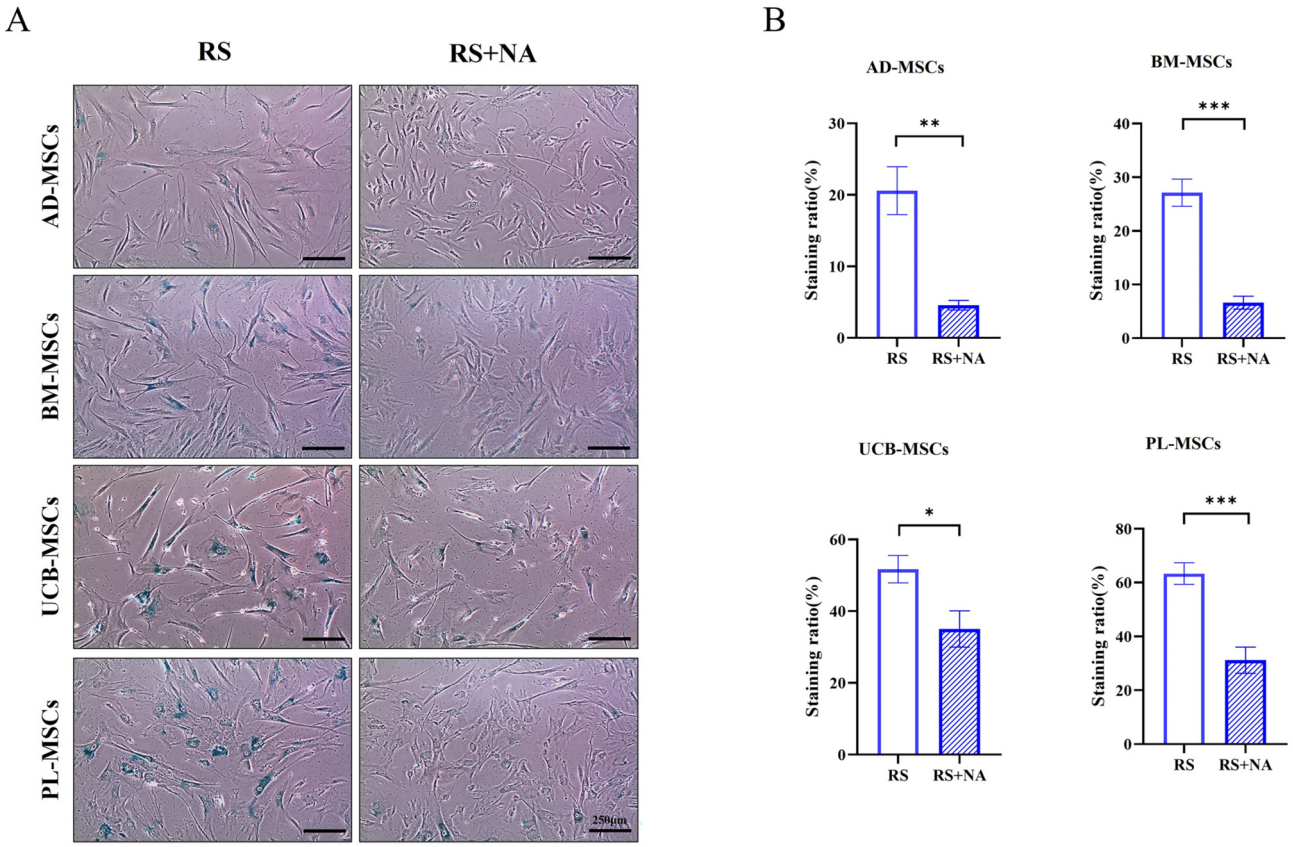


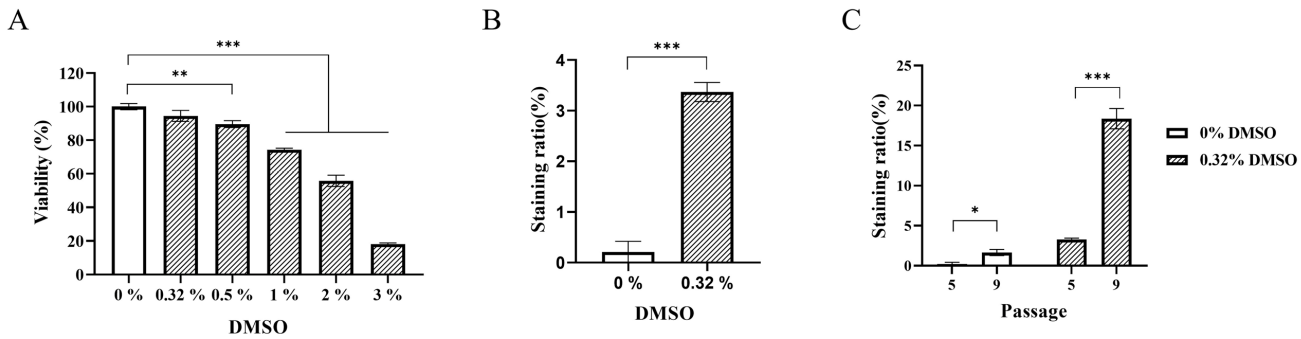
B

List of metabolite
(+)-β-Citronellol
1-Heptanol
1-Octanol
3-Methylindole
7-Methylguanine
Cholestanol
Hexyl propanoate
Linalool
L-Menthol
L-Pyroglutamic acid
Nervonic acid
Vitamin C
Xanthine

Supplementary Fig. S1. The putative metabolites sensitive to replicative senescent mesenchymal stem cells (RS-MSCs). (A) Cell viability was assessed using 485 fecal metabolites in non-senescent MSCs (NS-MSCs) and RS-MSCs. (B) The list of candidates derived from metabolite screening.



Supplementary Fig. S2. Nervonic acid (NA) had an inhibitory effect on replicative senescence in other mesenchymal stem cell (MSC)-types. (A) β-Galactosidase staining after NA treatment in replicative senescent MSCs derived from adipose (AD), bone marrow (BM), umbilical cord blood (UCB), and placenta (PL). Scale bar=250 μm. (B) The charts showed the reduction of β-gal positive cells in each MSCs. Data are expressed as mean±SEM and analyzed by two-tailed Student's t-test (*$p<0.05$, **$p<0.01$, ***$p<0.001$).



Supplementary Fig. S3. Dimethyl sulfoxide (DMSO) accelerated the replicative senescence in Wharton jelly-derived mesenchymal stem cells. (A) Cell viability was assessed after non-senescent mesenchymal stem cells (NS-MSC) treatment with DMSO at varying concentrations. (B) β-Galactosidase staining was performed with or without DMSO in NS-MSCs. (C) The difference in β-gal positive cell ratio in passage 5 and passage 9, according to DMSO exposure. Data are presented as mean±SEM. The significance of the differences was assessed by one-way ANOVA and two-tailed Student's t-test (*$p<0.05$, **$p<0.01$, ***$p<0.001$).