
Supporting Information

Local delivery of FTY720 in mesoporous bioactive glass improve bone regeneration by synergistically immunomodulating osteogenesis and osteoclastogenesis

Lu Liu,^{†acde} Fujian Zhao,^{†b} Xiaoyu Chen,^{acde} Man Luo,^{acde} Zhen Yang,^{acde} Xiaodong Cao,^{acde} Guohou Miao,^g Dafu Chen^{*f} and Xiaofeng Chen^{*acde}

a. School of Materials Science and Engineering, South China University of Technology, Guangzhou 510641, China. Email: chenxf@scut.edu.cn; Fax: +86 020 31066895; +86 020 87111752; Tel: +86 020 39380267; +86 020 22236283

b. Stomatological Hospital, Southern Medical University, Guangzhou 510280, China

c. National Engineering Research Centre for Tissue Restoration and Reconstruction, Guangzhou 510006, China

d. Key Laboratory of Biomedical Engineering of Guangdong Province, South China University of Technology, Guangzhou 510006, China

e. Key Laboratory of Biomedical Materials and Engineering of the Ministry of Education, South China University of Technology, Guangzhou 510006, China

f. Laboratory of Bone Tissue Engineering, Beijing Laboratory of Biomedical Materials, Beijing Research Institute of Orthopaedics and Traumatology, Beijing JiShuiTan Hospital, Beijing, 100035, China. Email: chendafu@jsthospital.org

g. Key Laboratory of Oral Medicine, Guangzhou Institute of Oral Disease, Stomatology Hospital of Guangzhou Medical University, Guangzhou 510140, China

† These authors contributed equally to this work and should be considered as equal first co-authors.

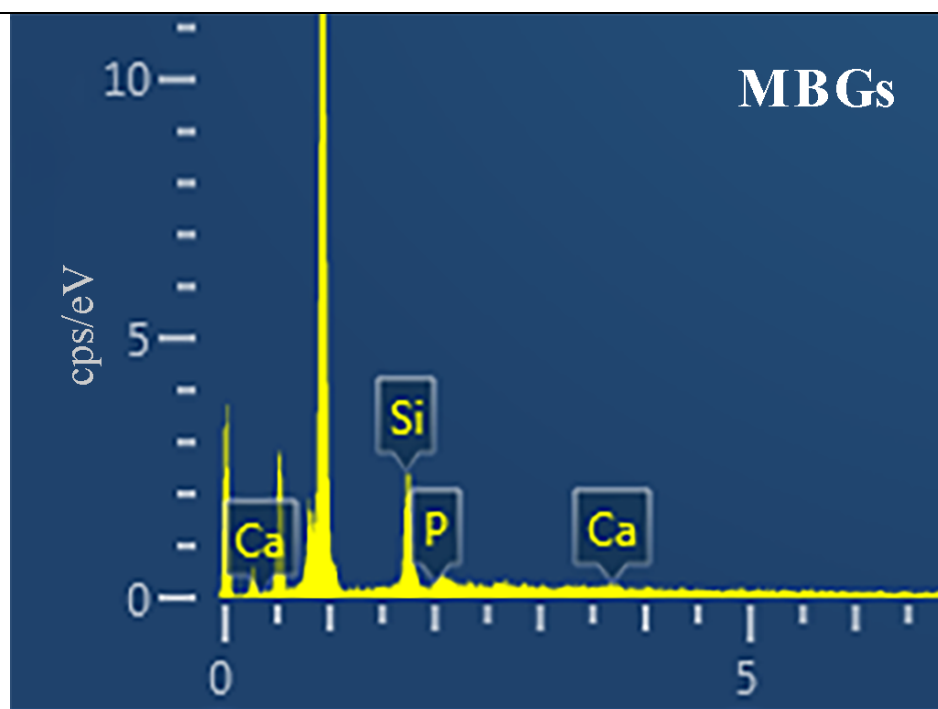


Figure S1. EDS analysis for MBGs.

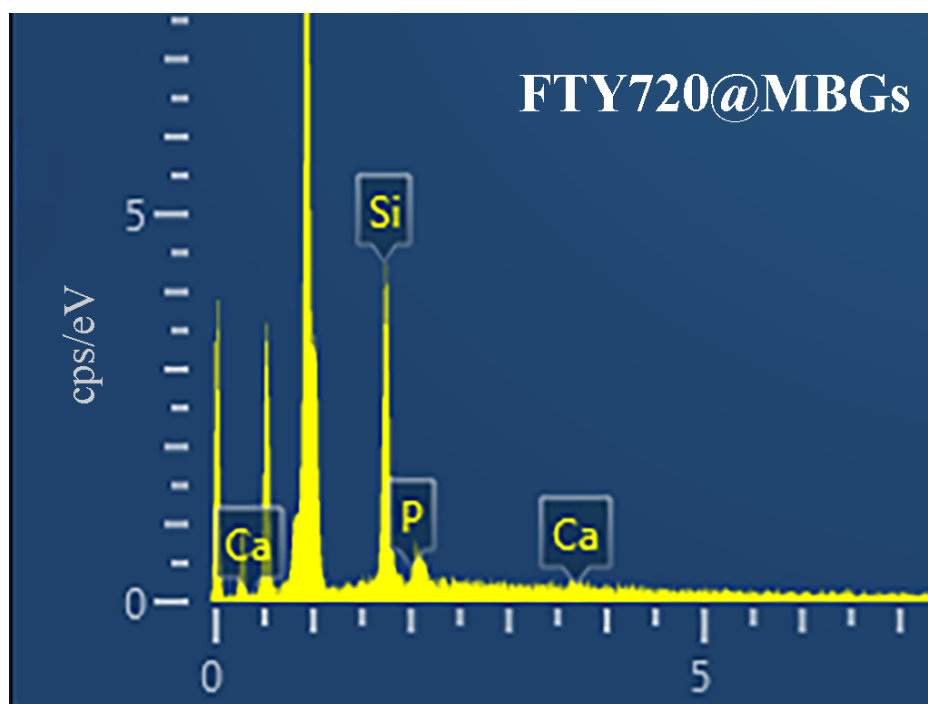


Figure S2. EDS analysis for MBGs@FTY720.

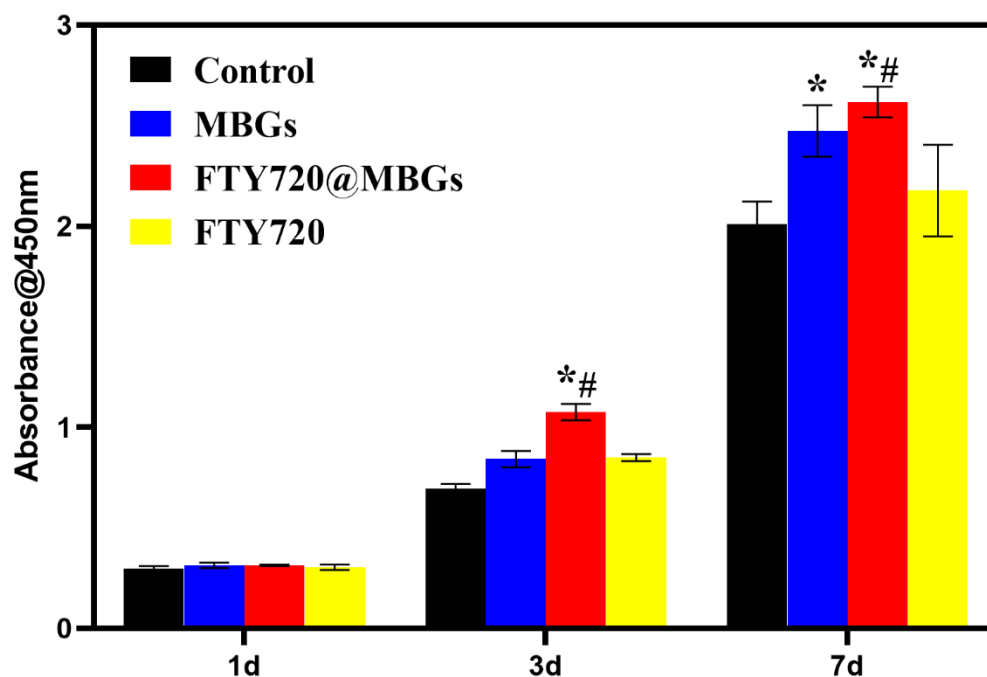


Figure S3. CCK-8 assay of RAW 264.7 cells with MBGs, FT720@MBGs and FTY720. (* $p<0.05$ vs Control group; # $p<0.05$ vs MBGs group).

Table S1 Inflammatory related gene primer pairs used in the qRT-PCR.

Genes	Primer sequences
GAPDH	Forward:5'-CTCCCACTCTTCCACCTTCG -3'
	Reverse:5'-TTGCTGTAGCCGTATTCATT -3'
Arginase	Forward:5'-CATATCTGCCAAGGACATCG-3'
	Reverse:5'-GGTCTCTTCCATCACTTTGC-3'
IL1ra	Forward:5'-CTCCAGCTGGAGGAAGTTAAC-3'
	Reverse:5'-CTGACTCAAAGCTGGTGGTG-3'
IL10	Forward:5'-GAGAAGCATGGCCCAGAAATC-3'
	Reverse:5'-GAGAAATCGATGACAGCGCC-3'
IL6	Forward:5'-ATAGTCCTTCCTACCCCAATTTCC-3'
	Reverse:5'-GATGAATTGGATGGTCTTGGTCC-3'
TNF α	Forward:5'-CTGAACTTCGGGGTGATCGG-3'
	Reverse:5'-GGCTTGCTCACTCGAATTTTGAGA-3'

Table 2 Osteogenesis and osteoclastogenesis related gene primer pairs used in the qRT-PCR.

Genes	Primer sequences
ALP	Forward:5'-TGCCTACTTGTGTGGCGTGAA-3'
	Reverse:5'-TCACCCGAGTGGTAGTCACAATG-3'
OPN	Forward:5'-GCAGTCTTCTGCGGCAGGCA-3'
	Reverse:5'-CACCGGGAGGGAGGAGGCAA-3'
OCN	Forward:5'-AGCAGCTTGGCCCAGACCTA-3'
	Reverse:5'-TAGCGCCGGAGTCTGTTCACCTAC-3'
COLI	Forward:5'-ATGCCGCGACCTCAAGATG-3'
	Reverse:5'-TGAGGCACAGACGGCTGAGTA-3'
RUNX2	Forward:5'-CACTGGCGGTGCAACAAGA-3'
	Reverse:5'-TTTCATAACAGCGGAGGCATTTC-3'
GAPDH	Forward:5'-CTCCCACTCTTCCACCTTCG -3'
	Reverse:5'-TTGCTGTAGCCGTATTTCATT -3'
TRAP	Forward:5'-TACCTGTGTGGACATGACC-3'
	Reverse:5'-CAGATCCATAGTGAAACCGC-3'
NFATc1	Forward:5'-GGTAACTCTGTCTTTCTAACCTTAAGCTC-3'
	Reverse:5'-GTGATGACCCCAGCATGCACCAGTCACAG-3'
MMP-9	Forward:5'-TCCAGTACCAAGACAAAGCCTA-3'
	Reverse:5'-TTGCACTGCACGGTTGAA-3'

Table S3 Zeta-potential analysis of MBGs and FTY720

	Zeta-potential (mV)
MBGs	-10.5
FTY720	39.5