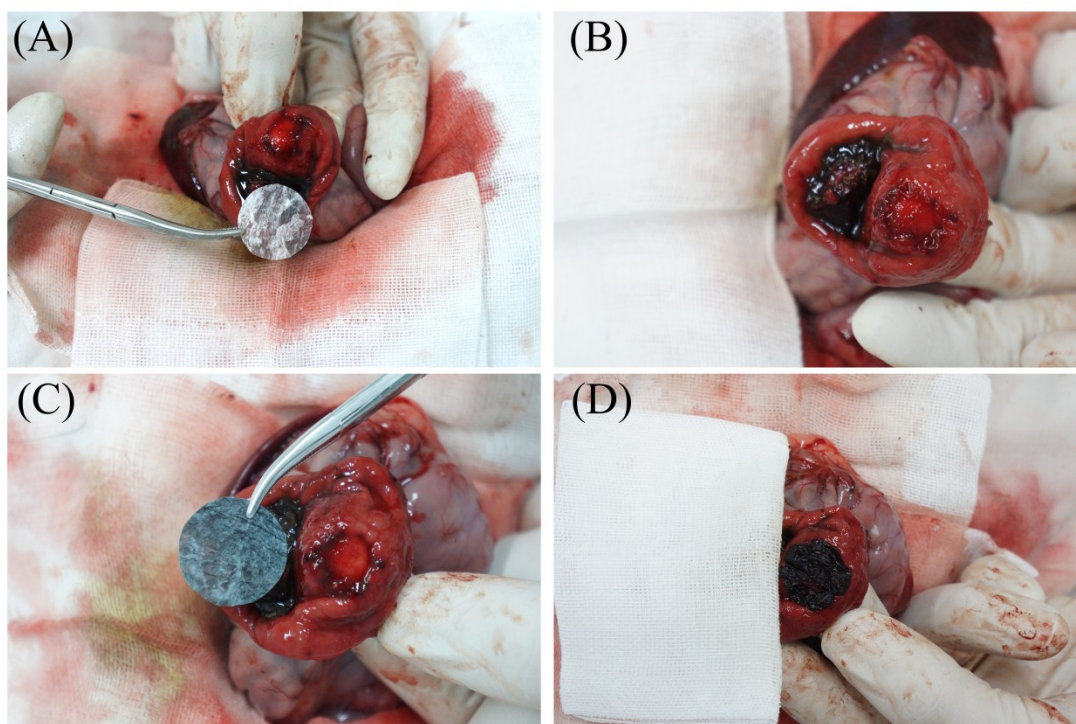
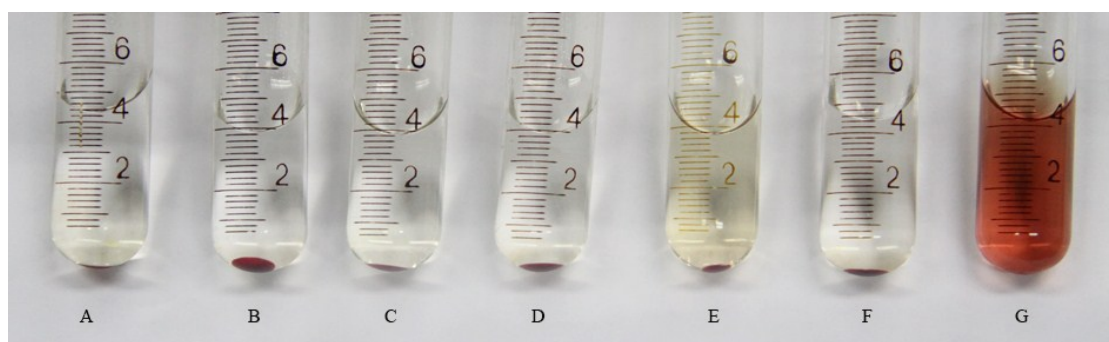


### *Supplementary information*

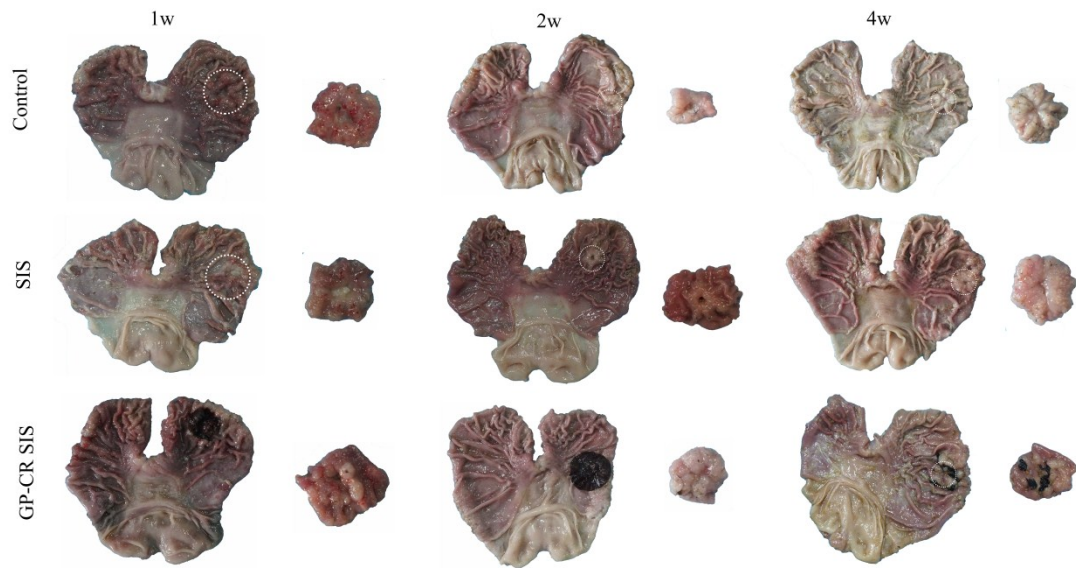
**Fig. S1.** Intraoperative photographs before and after the scaffolds were covered on the defected areas. Graphs before (A) SIS and (C) GP-CR SIS were anchored. Graphs after (B) SIS and (D) GP-CR SIS were anchored with 5-0 non-absorbable suture.



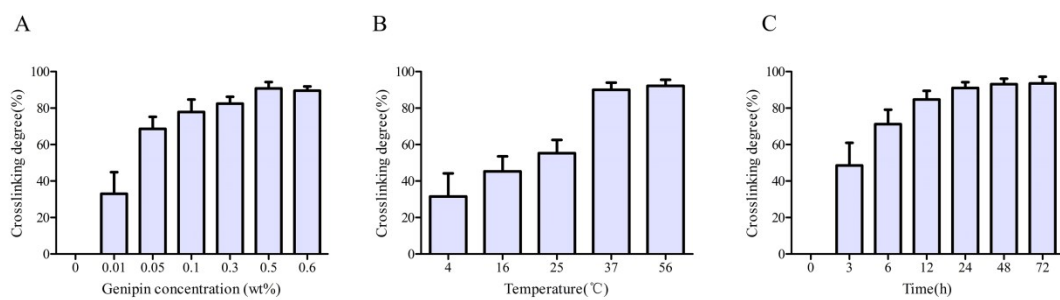
**Fig. S2.** Macrograph of hemolysis for GP-CR SIS scaffolds. A. The extract of 0.5%GP-CR SIS. B. The extract of 0.3%GP-CR SIS. C. The extract of 0.1%GP-CR SIS. D. The extract of 0.05%GP-CR SIS. E. The extract of SIS. F. Negative control group of physiological saline. G. Positive control group of deionized water.



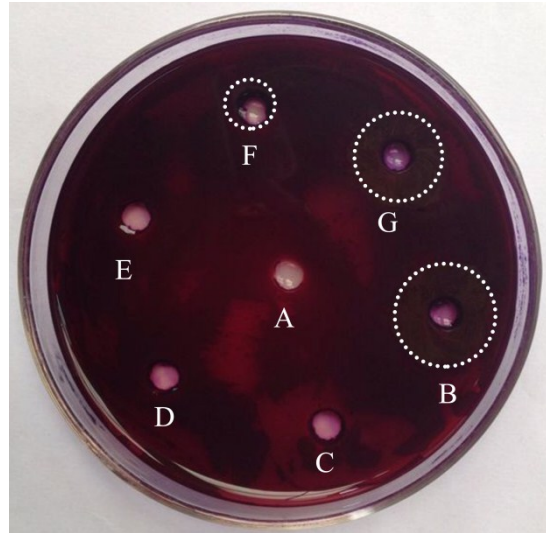
**Fig. S3.** Representative digital photographs of defected gastric mucosa in stomach of different groups retrieved at 1, 2 and 4 weeks after implantation.



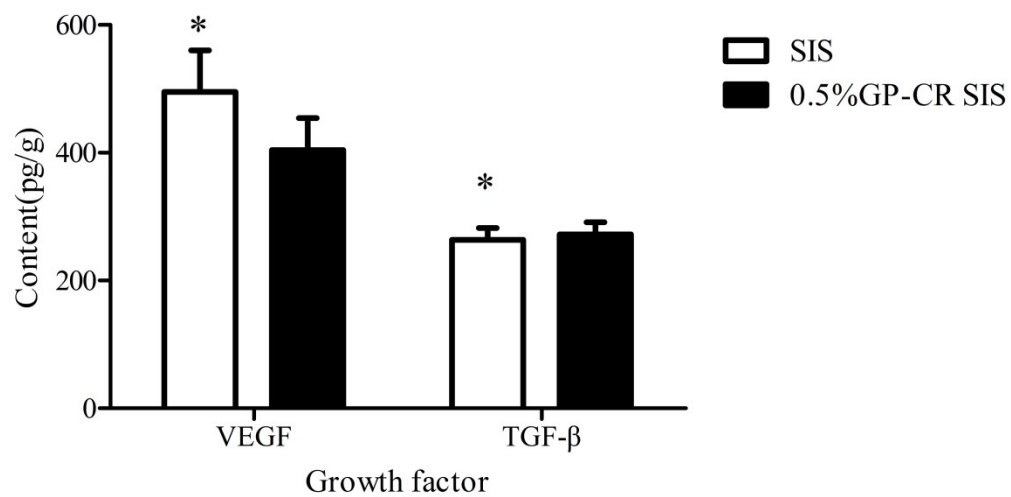
**Fig. S4.** The optimization of conditions for the modification of SIS by genipin-crosslinking. A. The crosslinking degree of SIS fixed with genipin at different concentrations. B. The crosslinking degree of SIS fixed with genipin at different temperatures. C. The crosslinking degree of SIS fixed with genipin at various elapsed crosslinking durations.



**Fig. S5.** Inhibition of *Helicobacter pylori* by (A) PBS, (B) penicillin, (C) SIS, (D) 0.05%GP-CR SIS, (E) 0.1%GP-CR SIS, (F) 0.3%GP-CR SIS and (G) 0.5%GP-CR SIS.

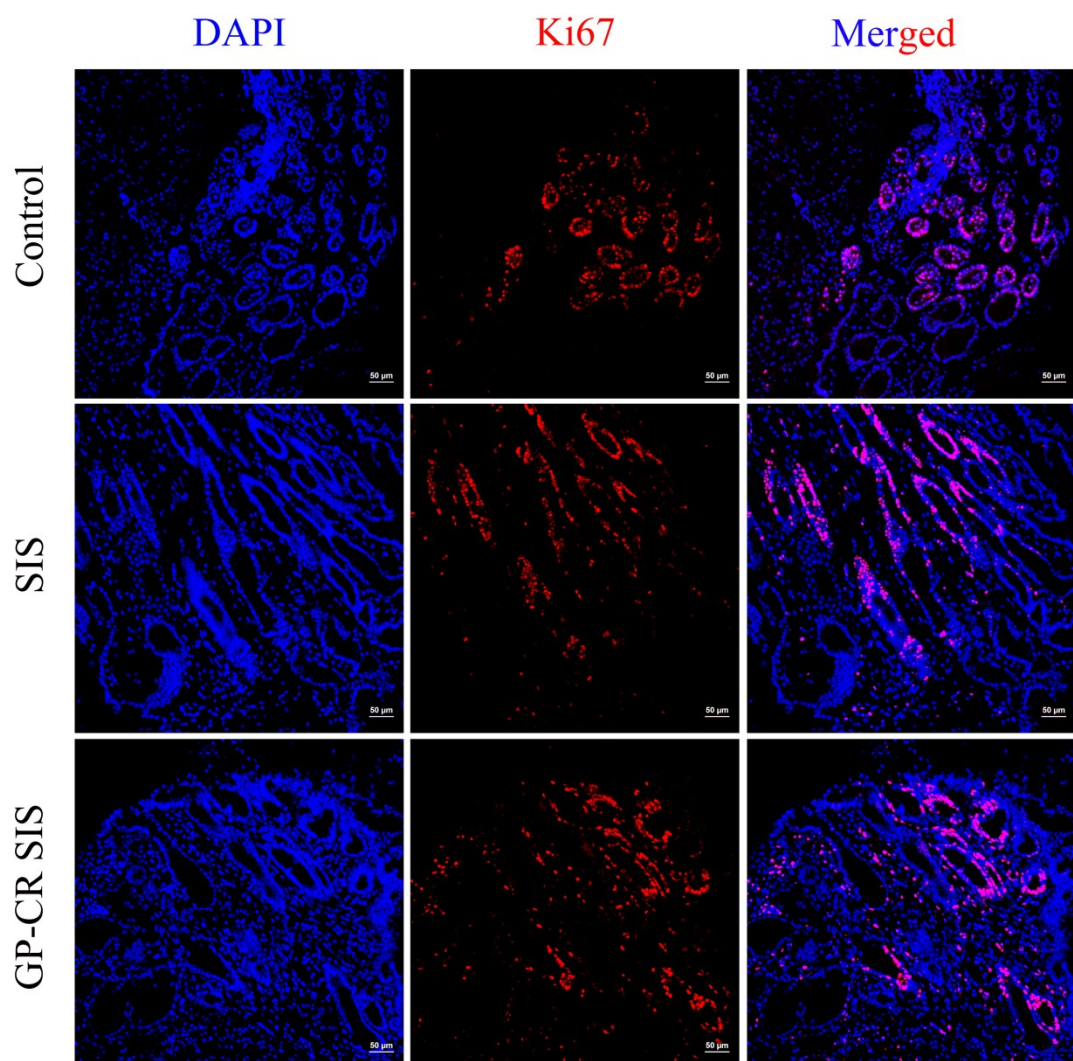


**Fig. S6.** The content of VEGF and TGF- $\beta$  in SIS before and after genipin crosslinking.



**Fig. S7.** Graphs represent the proliferating epithelial cells with immunofluorescent staining against Ki67 in ulcer margin of the different groups at day 7. Scale bar: 50  $\mu$ m. Red: Ki67; Blue: DAPI which stains nucleus. Pink: blue merged with red.





**Table S1**

**Primer sequences for real-time quantitative polymerase chain reaction (PCR)**

Target	Primer sequences(5'–3')	GenBank no.
GAPDH	F: CCACTTTGTGAAGCTCATTTCT	NM_001082253.1
	R: TCGTCCTCCTCTGGTGCTCT	
VEGFR2	F: GTGTGGTCTTTTCGGCGTGT	NM_001195670.1
	R: GCTCTCATTCTCGTGCCTTCTT	
ANGPT2	F: CAGCACGACCTGACAGAG	XM_002720896.2
	R: TTTAGCCGCAAAGGAGTT	

EGFR	F: TGGGTCCAAGCCTTACGA R: GGGCGACTGTCAGCATCT	XM_008261843.1
COX2	F:GGTGTGAAAGGCAAGAAAGAAC R:TTGAAGAACTGGTGGGTGAAGT	U97696.1

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**Table S2**

**The calcium content of scaffolds before and after implantation**

Group	Calcium content ( $\mu\text{g}$ calcium/mg dry tissue weight)	
	Before implantation	4-week postoperatively
SIS	$0.42 \pm 0.05$	$0.72 \pm 0.06$
0.05% GP-CR SIS	$0.40 \pm 0.04$	$1.26 \pm 0.41$
0.1% GP-CR SIS	$0.42 \pm 0.03$	$1.12 \pm 0.26$
0.3% GP-CR SIS	$0.43 \pm 0.05$	$0.92 \pm 0.20$
0.5% GP-CR SIS	$0.41 \pm 0.03$	$0.96 \pm 0.18$