Supporting Information

Melatonin in functionalized biomimetic constructs promotes rapid tissue regeneration in Wistar albino rats

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Fig. S1. SEM images showing the surface morphology of 100/100 wt.% C/PDAGA hybrid scaffold with pore size.
**Fig. S2.** Digital images of as-prepared freeze dried hybrid scaffolds showing the surface and cross section morphology.

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<th>Surface</th>
<th>Cross section</th>
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<td>100/100 wt.% C/PDAGA</td>
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Fig. S3. BET observation of 100/0 wt.% C/PDAGA hybrid scaffold (a) Nitrogen adsorption-desorption isotherm and (b) Pore size distribution curve.
**Fig. S4.** Individual fluorescence microscopic images of fluorescein diacetate stained Swiss 3T6 mouse fibroblast cells on the 100/0, 100/100 wt.% C/PDAGA and 100/100 wt.% C/PDAGA loaded with melatonin hybrid scaffolds at 24 h culture period.
**Fig. S5.** Individual fluorescence microscopic images of fluorescein diacetate stained Swiss 3T6 mouse fibroblast cells on the 100/0, 100/100 wt.% C/PDAGA and 100/100 wt.% C/PDAGA loaded with melatonin hybrid scaffolds at 72 h culture period.
**Fig. S6.** Individual photomicrographs of control group after haematoxylin and eosin staining at (a) 4\(^{th}\), (b) 8\(^{th}\) and (c) 12\(^{th}\) day of granulation tissue. F and M refer to fibroblasts and macrophages, respectively. Schematic shows the structural morphology of fibroblasts, inflammatory cells and blood vessels.
Fig. S7. Individual photomicrographs of 100/0 wt.% C/PDAGA hybrid scaffold treated group after haematoxylin and eosin staining at (a) 4th, (b) 8th and (c) 12th day of granulation tissue. F and M refer to fibroblasts and macrophages, respectively. Schematic shows the structural morphology of fibroblasts, inflammatory cells and blood vessels.
**Fig. S8.** Individual photomicrographs of 100/100 wt.% C/PDAGA hybrid scaffold treated group after haematoxylin and eosin staining at (a) 4th, (b) 8th and (c) 12th day of granulation tissue. F and M refer to fibroblasts and macrophages, respectively. Schematic shows the structural morphology of fibroblasts, inflammatory cells and blood vessels.
**Fig. S9.** Individual photomicrographs of 100/100 wt.% C/PDAGA loaded with melatonin hybrid scaffold treated group after haematoxylin and eosin staining at (a) 4\(^{th}\), (b) 8\(^{th}\) and (c) 12\(^{th}\) day of granulation tissue. F, M and BV refer to fibroblasts, macrophages and blood vessels, respectively. Schematic shows the structural morphology of fibroblasts, inflammatory cells and blood vessels.
**Fig. S10.** Individual photomicrographs of control group after Masson’s trichrome staining at (a) 4\(^{th}\), (b) 8\(^{th}\) and (c) 12\(^{th}\) day of granulation tissue. Blue colour stained region in the images indicates the collagen formation.
**Fig. S11.** Individual photomicrographs of 100/0 wt.% C/PDAGA hybrid scaffold treated group after Masson’s trichrome staining at (a) 4<sup>th</sup>, (b) 8<sup>th</sup> and (c) 12<sup>th</sup> day of granulation tissue. Blue colour stained region in the images indicates the collagen formation.
**Fig. S12.** Individual photomicrographs of 100/100 wt.% C/PDAGA hybrid scaffold treated group after Masson’s trichrome staining at (a) 4\textsuperscript{th}, (b) 8\textsuperscript{th} and (c) 12\textsuperscript{th} day of granulation tissue. Blue colour stained region in the images indicates the collagen formation.
Fig. S13. Individual photomicrographs of 100/100 wt.% C/PDAGA loaded with melatonin hybrid scaffold treated group after Masson’s trichrome staining at (a) 4\textsuperscript{th}, (b) 8\textsuperscript{th} and (c) 12\textsuperscript{th} day of granulation tissue. Blue colour stained region in the images indicates the collagen formation.