SUPPORTING INFORMATION

Ginger and Garlic Extracts Enhance Osteogenesis in 3D Printed Calcium Phosphate Bone Scaffolds with Bimodal Pore Distribution

Susmita Bose*[,α], Dishary Banerjee[†,α], and Ashley A. Vu[†,α]

[α]W. M. Keck Biomedical Materials Research Laboratory

School of Mechanical and Materials Engineering

Washington State University

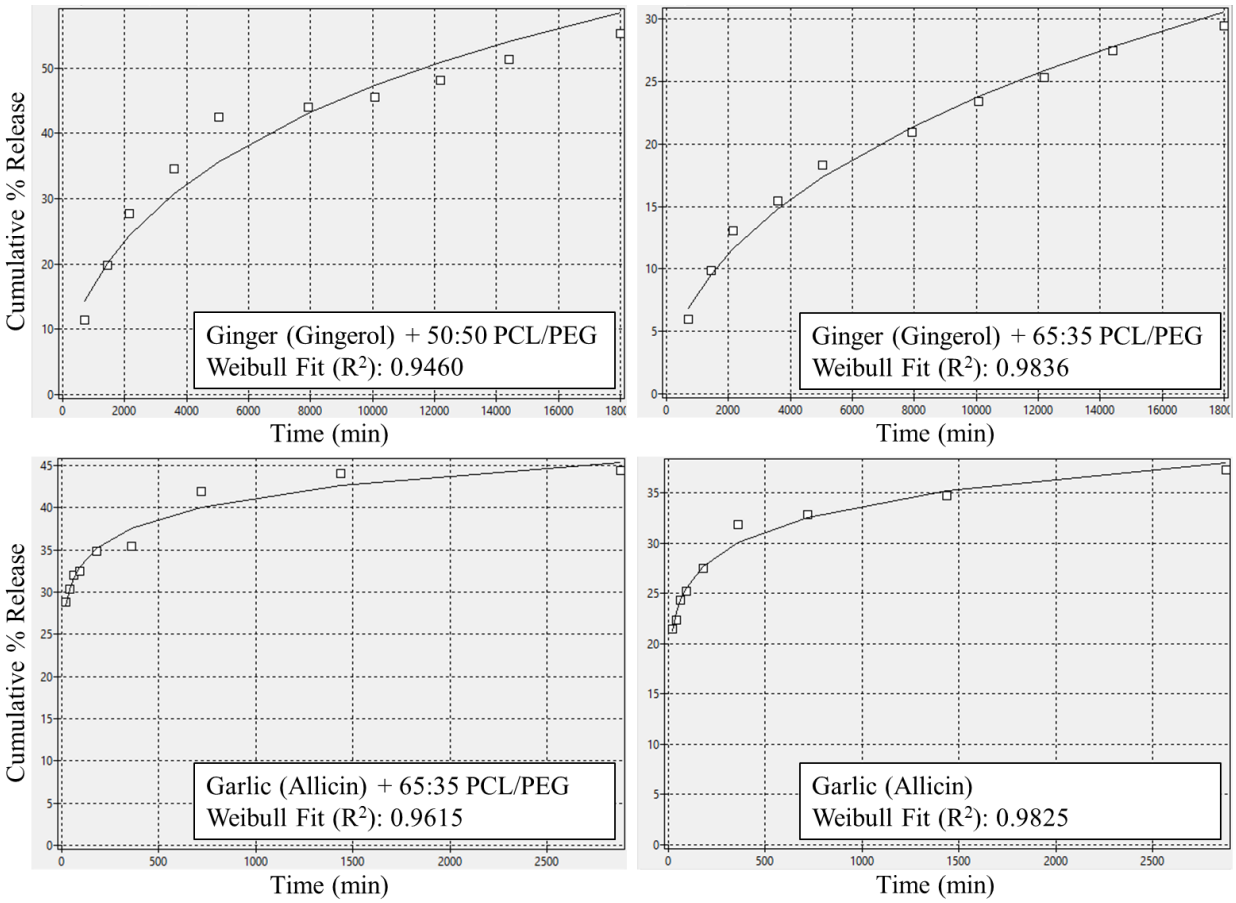
Pullman, Washington 99164, United States

Contact author: *Email: sbose@wsu.edu

[†]Equal contribution

This Supporting Information file includes:

Figure S1-S4



Weibull equation: $m = 1 - \exp\left[-\frac{(t)^b}{a}\right]$			
Drug + Polymer System	a	b	R^2
Gingerol + 50:50 PCL/PEG	228.99	0.54	0.9460
Gingerol + 65:35 PCL/PEG	408.02	0.51	0.9836
Allicin + 65:35 PCL/PEG	4.29	0.12	0.9615
Allicin + No Polymer	6.36	0.14	0.9825

Figure S1: Weibull distribution fit and equations for ginger (gingerol) and garlic (allicin) extract release from calcium phosphate scaffolds.

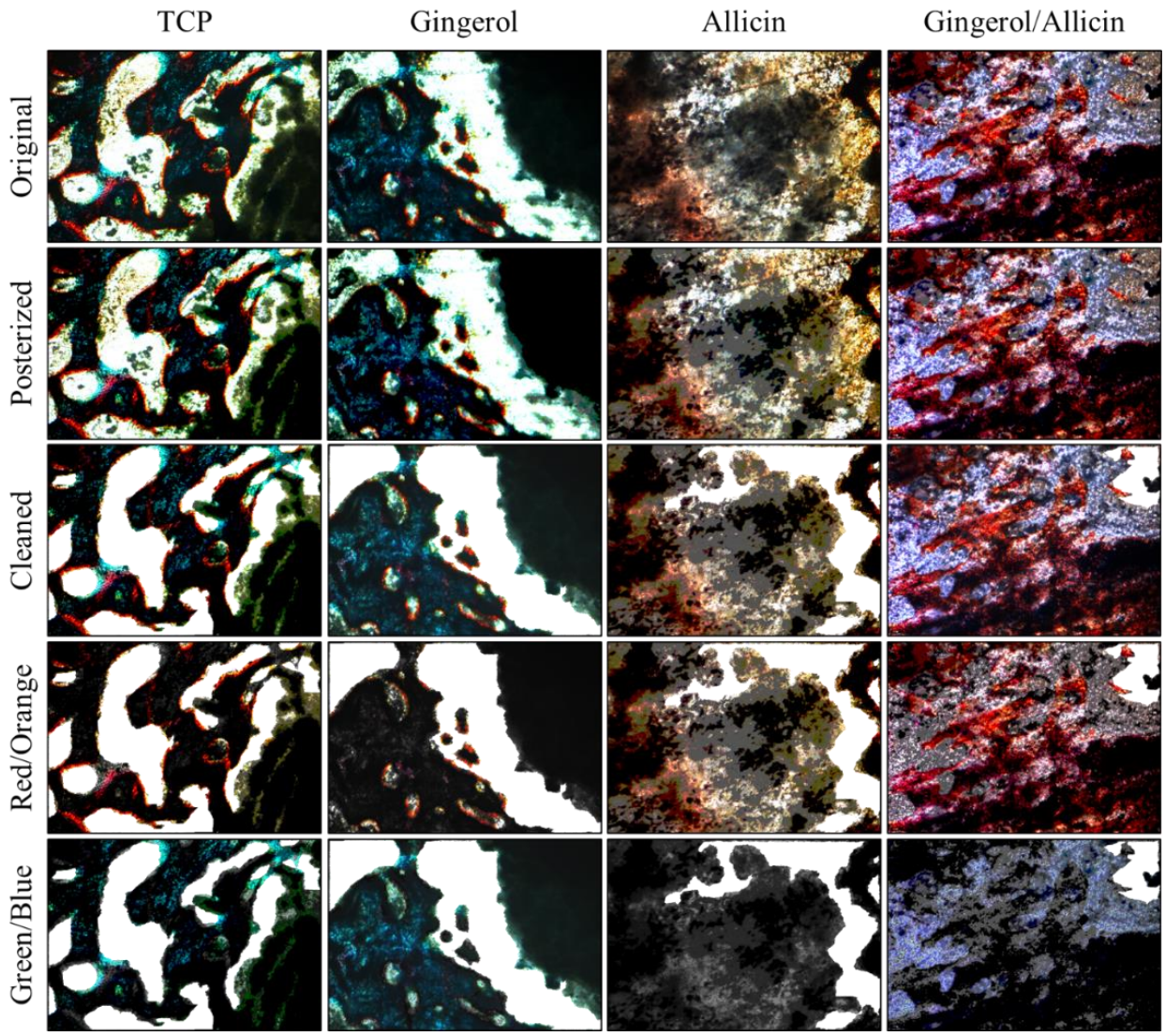


Figure S2: An image breakdown of the Modified Masson-Goldner trichrome color analysis of a set of week 4 images. The original image is posterized to simplify the coloration and number of different tones. The image is then cleaned for removal of areas that have no tissue or has the Spurr's resin. The resin is yellow/gold and would affect color analysis if not removed. The number of pixels is then isolated and recorded for black, red/orange (osteoid formation), and green/blue (bone mineralization) pixels against total number of pixels.

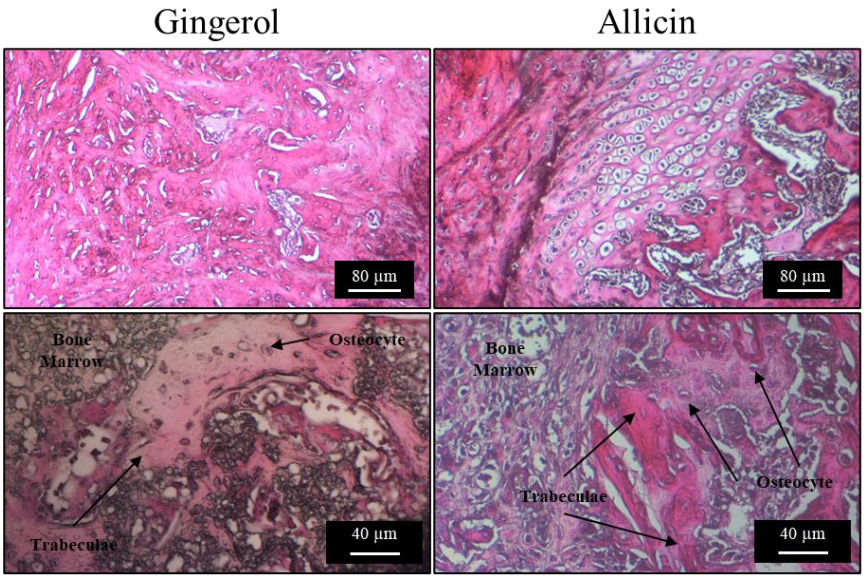


Figure S3: Ginger extract (gingerol) and garlic extract (allicin) individual effects on H&E stained tissue sections after 4 weeks of implantation. Healthy bone tissue seen in both treatments.

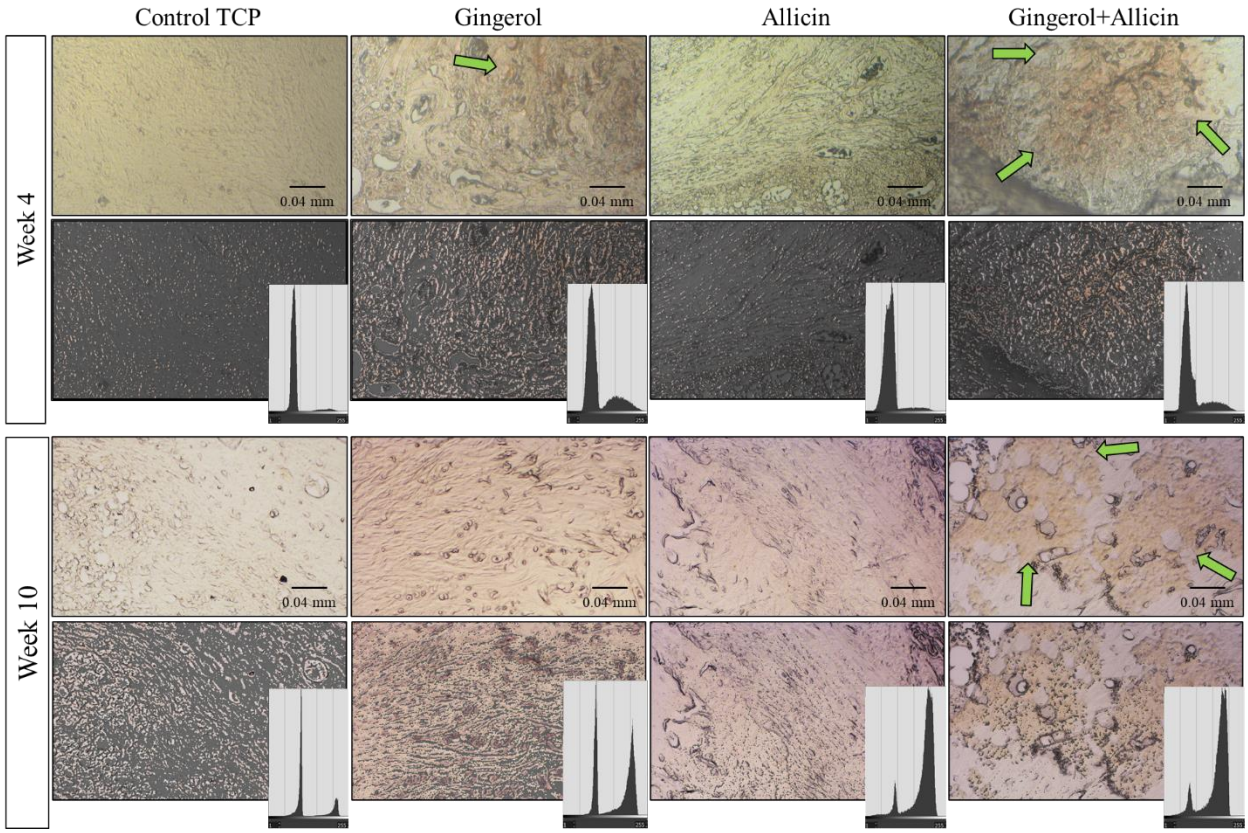


Figure S4: Color hue distribution showing shifts in red expression with ginger extract / ginger extract+garlic extract at week 4 timepoint and with garlic extract in week 10. This indicates a collagen supportive environment when low load bearing scaffolds are loaded with natural extractions of ginger and garlic extracts individually and in tandem.