materials

Supplementary Materials: An Antibiotic-Releasing Bone Void Filling (ABVF) Putty for the Treatment of Osteomyelitis

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S1.1 HPLC validation of vancomycin free-base: HPLC was carried out using the following method. Briefly, mobile phase contained 0.1% TFA in water and 0.1% TFA in acetonitrile. The flow rate was set at 1 mL/min. Vancomycin salt stock solution and different fractions during the vancomycin free-base preparation (VancFB2) was analyzed to see if there are by-products. The wavelength was 280 nm and Waters Corporation Alliance e2695 with PDA detector HPLC system (Milford, MA, USA) was used with a C18 column (XTERRA RP 18 5mm 4.6 × 250 mm column).
HPLC validation of V-fb showed that no additional by product was created during the V-fb production. The peaks appeared at the same spot for V-fb as it did for V-HCl (Figure S1).

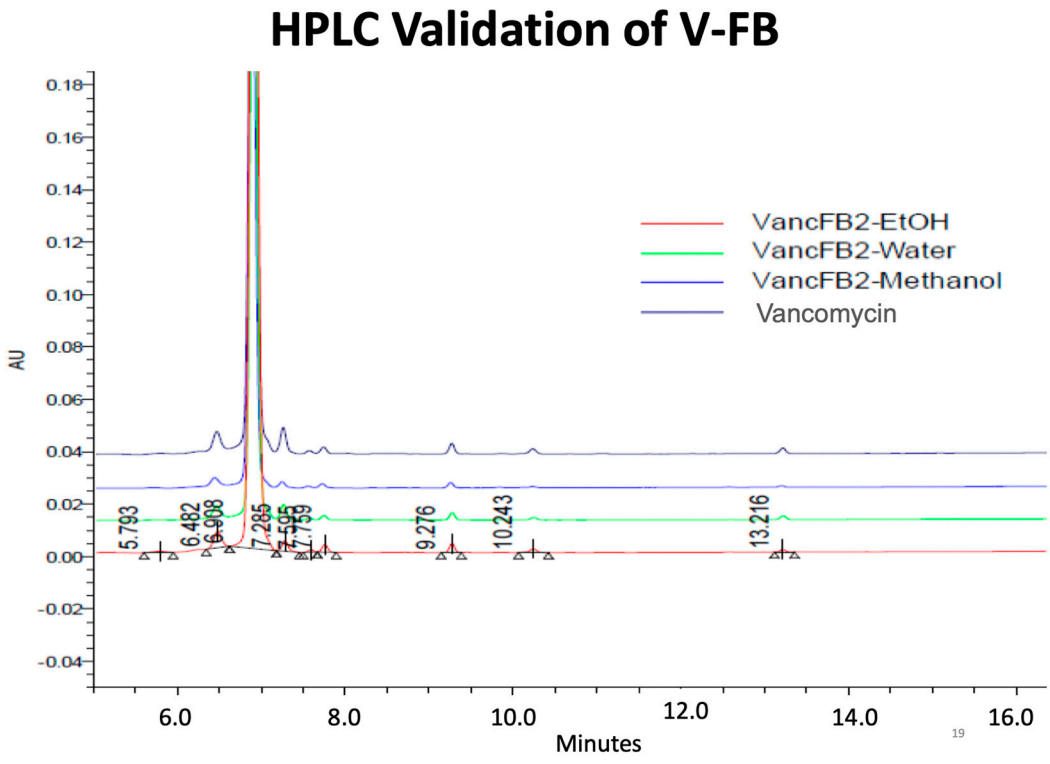

Figure S1. HPLC validation of V-fb. The peaks appeared at the same time for both V-HCl and V-fb confirming the production of V-fb.

S1.2 In vitro bioactivity of V-fb: To compare the in vitro bioactivity of prepared V-fb and V-HCl, a Kirby-bauer ZOI (zone of inhibition) assay was done using different concentrations of the drugs against *Staphylococcus aureus* (ATCC 49230) as described in the manuscript. Bioactivity of V-fb and V-HCl against *S. aureus* measured via ZOI assay was similar. No significant difference was seen between the ZOI with no bacterial growth at a particular concentration (n = 3 for each concentration) (Figure S2).

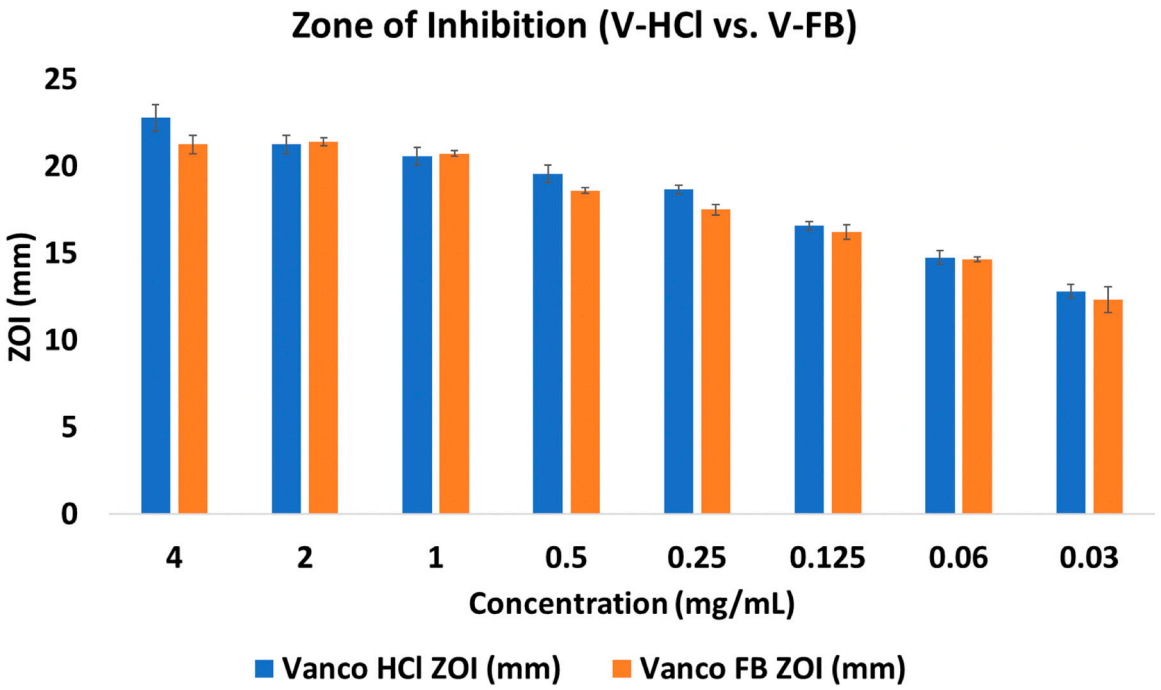

Figure S2. The bioactivity of V-HCl and V-FB was determined via a Kirby Bauer zone of inhibition study (Staphylococcus aureus strain 49230: 1.0×10^7 CFU/mL).

S1.3 Making of Bone Crusher: From a local hardware store three components (Figure S3): the bottom part (A) screws on to the barrel (B). The piston (C) then can be used to pulverize the bone using a hammer. (D) is the finished crusher. The crusher was autoclaved before being used for pulverizing the snap-frozen bone.

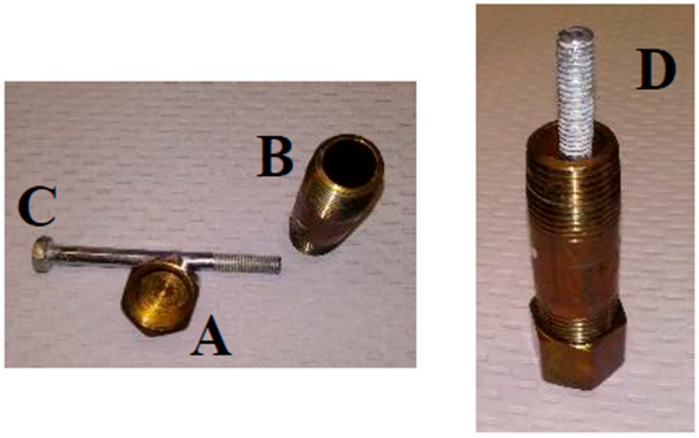

Figure S3. The bone crusher was made using three components. The bottom part (**A**) screws on to the barrel (**B**). The piston (**C**) then can be used to pulverize the bone using a hammer. (**D**) is the finished crusher.

Table S1. Vancomycin release kinetics from ABVF fitted into different kinetics equation. Korsemeyer-Peppas equation seems to have the best fitted model with high R2 value.

Drug Release Kinetic Equation	Zero-Order	First-Order	Korsmeyer-Peppas	Higuchi	Hixon-Crowell
R^2	0.7181	0.9478	0.9964	0.8939	0.907