

Analysis of the Ability of Different Allografts to Act as Carrier Grafts for Local Drug Delivery

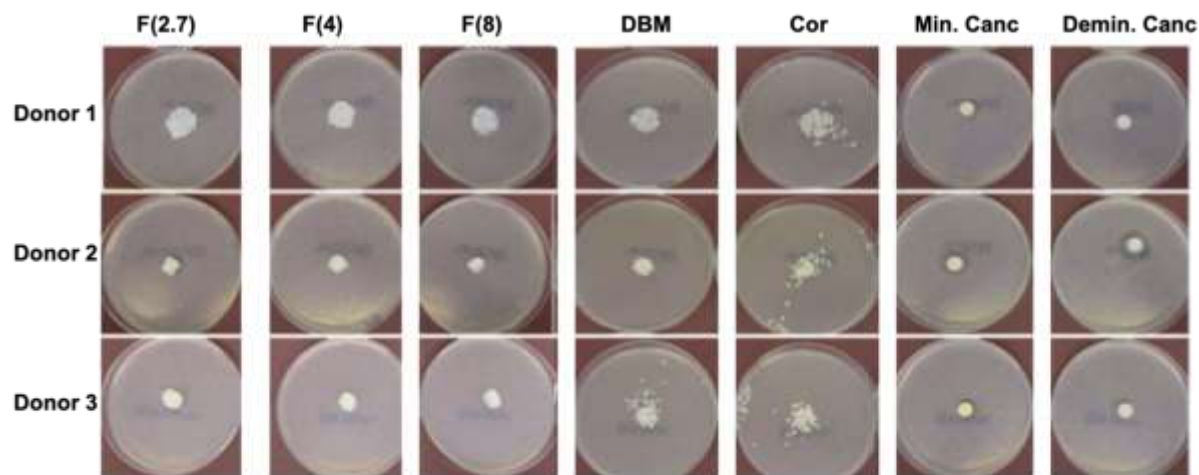
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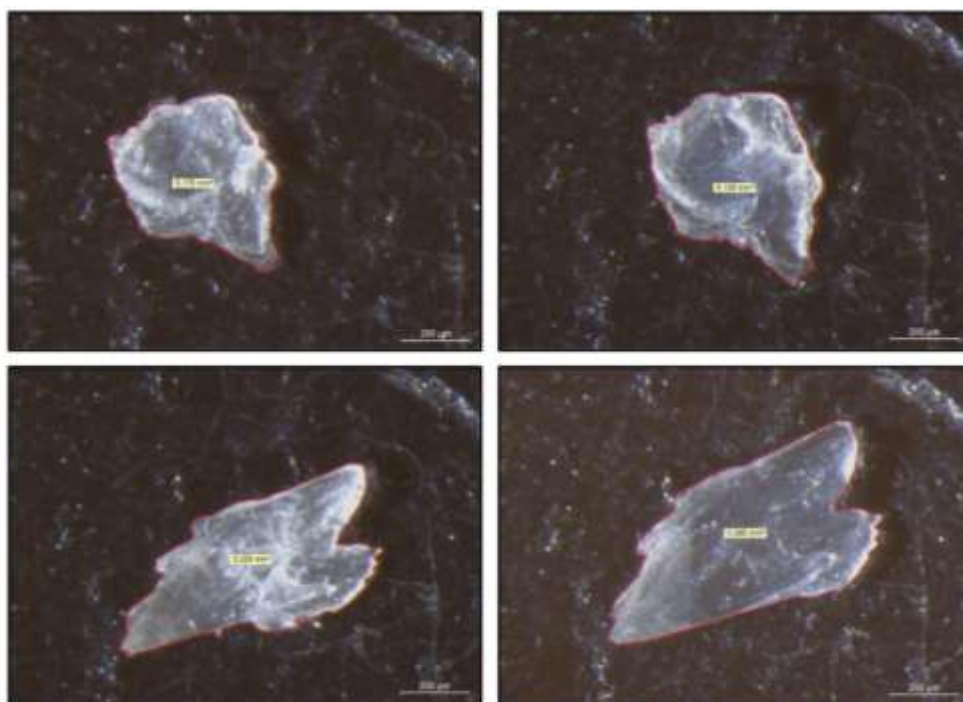
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Supplementary Figure S1. Zone of inhibition (ZOI) test after 30 minutes of incubation: Gentamicin elution 3 from the respective grafts after 21 days of elution.



Supplementary Figure S2: Microscopy images of DBM particles before (A and C, left) and after (B and D, 23 right) rehydration with water (6.3 x magnification, scale bar = 200 μm).

Supplementary Table S1. *Grafts used for the absorption capacity testing with PBS*

Group	Type	Dry weight (mg, mean \pm SD)
Cancellous bone (high density)	Mineralized	216 \pm 29
Cancellous bone (medium density)	Mineralized	126 \pm 3
Cancellous bone (low density)	Mineralized	61 \pm 6
Cancellous bone	Demineralized	55 \pm 22
Cortical granules (1-2 mm)	Mineralized	282 \pm 1
DBM granules (1-2 mm)	Demineralized	106 \pm 1
Fibrous graft (2.7 ml/g)	Demineralized	141 \pm 1
Fibrous graft (4 ml/g)	Demineralized	102 \pm 0

Supplementary Table S2. *Grafts used for the gentamicin elution testing*

Group	Type	Dry weight (mg, mean \pm SD)	Antibiotic addition (μ L)
Cancellous bone	Mineralized	171.4 \pm 22.4	2000
Cancellous bone	Demineralized	60.7 \pm 6.8	2000
Cortical granules (1-2 mm)	Mineralized	344.4 \pm 2.9	2000
DBM granules (1-2 mm)	Demineralized	104.3 \pm 1.2	2000
Fibrous graft (2.7 ml/g)	Demineralized	91.9 \pm 2.4	243
Fibrous graft (4 ml/g)	Demineralized	76.5 \pm 1.1	300
Fibrous graft (8 ml/g)	Demineralized	46.2 \pm 1.8	360

Supplementary Table S3. Statistical significance of total fluid absorbed in the matrix (lower part in red) and interstitial spaces (upper part in blue). Given are the exact p-values. Fibrous grafts absorbed significantly more fluid than any other group.

	Fibrous graft (2.7 ml/g)	Fibrous graft (4 ml/g)	DBM granules (1-2 mm)	Cortical granules (1-2 mm)	Min. Cancellous bone(low density)	Min. Cancellous bone (medium density)	Min. Cancellous bone (high density)	Demin. Cancellous bone
Fibrous graft (2.7 ml/g)		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Fibrous graft (4 ml/g)	<0.0001		0.8114	0.9985	<0.0001	<0.0001	0.0071	<0.0001
DBM granules (1-2 mm)	<0.0001	<0.0001		0.987	<0.0001	<0.0001	0.1782	<0.0001
Cortical granules (1-2 mm)	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	0.0305	<0.0001
Min. Cancellous bone (low density)	<0.0001	<0.0001	<0.0001	0.0003		0.9997	<0.0001	0.814
Min. Cancellous bone (medium density)	<0.0001	<0.0001	<0.0001	0.4639	0.1176		0.0007	0.6272
Min. Cancellous bone (high density)	<0.0001	<0.0001	<0.0001	0.9998	0.0005	0.3338		<0.0001
Demin. Cancellous bone	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	0.0043	

Supplementary Table S4. Statistical significance of gentamicin elution by different bony grafts over a 21-day period. Given are the exact p-values. No significant differences were observed after day 7. ns: not significant ($p > 0.05$); F(2.7): Fibrous graft 2.7 ml/g, F(4): Fibrous graft 4 ml/g; F(8): Fibrous graft 8 ml/g; Cor: cortical granules; Min. Canc: cancellous bone; DBM: demineralized bone matrix; Demin. Canc: demineralized cancellous bone.

Parameters	1h	4h	1d	2d	3d	4d	7d
F(2.7) vs. F(4)	ns	ns	ns	ns	ns	ns	ns
F(2.7) vs. F(8)	0.0166	ns	ns	ns	0.0207	0.0069	0.0365
F(2.7) vs. DBM	ns	0.0041	ns	ns	0.0209	ns	ns
F(2.7) vs. Cor	ns	0.0006	ns	ns	0.0268	0.0009	0.0419
F(2.7) vs. Min. Canc	ns	ns	ns	ns	0.0465	ns	ns
F(2.7) vs. Demin. Canc	ns	0.0046	ns	ns	0.0142	0.0003	ns
F(4) vs. F(8)	0.0297	ns	0.0321	0.03	0.0156	0.042	0.0229
F(4) vs. DBM	ns	0.0021	0.0322	0.0339	ns	ns	ns
F(4) vs. Cor	ns	0.0007	0.0372	0.0398	0.0248	0.0353	0.0089
F(4) vs. Min. Canc	ns	0.0319	0.0488	ns	ns	ns	ns
F(4) vs. Demin. Canc	ns	0.0027	0.0338	0.0216	0.0244	ns	0.0143
F(8) vs. DBM	ns	ns	ns	ns	ns	ns	ns
F(8) vs. Cor	0.0193	ns	ns	ns	ns	ns	ns
F(8) vs. Min. Canc	0.0343	ns	ns	ns	0.0292	ns	ns
F(8) vs. Demin. Canc	ns	ns	ns	ns	ns	ns	ns
DBM vs. Cor	ns	ns	ns	ns	ns	ns	ns
DBM vs. Min. Canc	ns	ns	ns	ns	ns	ns	ns
DBM vs. Demin. Canc	ns	ns	ns	ns	ns	ns	ns
Cor vs. Min. Canc	ns	ns	ns	0.0147	0.0075	ns	ns
Cor vs. Demin. Canc	ns	ns	ns	ns	ns	ns	ns
Can vs. Demin. Canc	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S5. Statistical significance of ZOI testing with different bony grafts over a 21-day period. Given are the exact p-values. No significant differences were observed after day 3. ns: not significant ($p > 0.05$); F(2.7): Fibrous graft 2.7 ml/g, F(4): Fibrous graft 4 ml/g; F(8): Fibrous graft 8 ml/g; Cor: cortical granules; Min. Canc: cancellous bone; DBM: demineralized bone matrix; Demin. Canc: demineralized cancellous bone.

Parameters	1h	4h	1d	2d	3d
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F(2.7) vs. F(4)	ns	ns	ns	ns	ns
F(2.7) vs. F(8)	ns	ns	0.0379	ns	0.0137
F(2.7) vs. DBM	ns	0.0033	0.0028	ns	ns
F(2.7) vs. Cor	ns	ns	0.0231	0.027	0.0137
F(2.7) vs. Min. Canc	ns	ns	0.0468	ns	ns
F(2.7) vs. Demin. Canc	ns	ns	ns	ns	0.0137
F(4) vs. F(8)	ns	ns	0.0489	ns	0.0142
F(4) vs. DBM	ns	0.0021	0.0063	ns	ns
F(4) vs. Cor	ns	ns	0.0244	ns	ns
F(4) vs. Min. Canc	ns	ns	ns	ns	ns
F(4) vs. Demin. Canc	ns	ns	ns	ns	0.0142
F(8) vs. DBM	ns	ns	ns	ns	ns
F(8) vs. Cor	ns	ns	ns	ns	0
F(8) vs. Min. Canc	ns	ns	ns	ns	0.0275
F(8) vs. Demin. Canc	ns	ns	ns	ns	ns
DBM vs. Cor	ns	ns	ns	ns	ns
DBM vs. Min. Canc	ns	0.0487	ns	ns	ns
DBM vs. Demin. Canc	ns	0.0387	ns	ns	ns
Cor vs. Min. Canc	ns	ns	ns	ns	0.0275
Cor vs. Demin. Canc	ns	ns	ns	ns	ns
Can vs. Demin. Canc	ns	ns	ns	ns	0.0275

Supplementary Table S6. Statistical significance of gentamicin elution of Fibrous graft 2.7 ml/g with different incubation times over a 21-day period. Given are the exact p-values. No significant differences were observed after day 1. ns: not significant ($p > 0.05$).

Parameters	1h	4h	1d	2d
5 min vs. 10 min	<0.0001	0.0063	ns	ns
5 min vs. 20 min	ns	ns	ns	ns
5 min vs. 30 min	<0.0001	0.036	0.0003	ns
10 min vs. 20 min	<0.0001	ns	ns	ns
10 min vs. 30 min	ns	ns	0.0014	ns
20 min vs. 30 min	<0.0001	ns	0.0058	ns