

MATRIXCELLECT® 100 DBM PUTTY

IN-VIVO OSTEOINDUCTION ASSAY IN ATHYMIC RAT

Every donor lot (Tables 1-7 indicate up to 7 lots) is tested in athymic rats (# indicates rats: 7 thru 13) which are euthanized on Day 28. Histological criteria for evidence of osteoinduction include the presence of: Chondrocytes, Osteoblasts, Cartilage, Bone Marrow, and New Bone (see last column). X verifies presence. Implants displaying a Grade score of #1 or greater are considered osteoinductive.

TABLE 1: SUMMARY OF PATHOLOGY REPORT - LOT # : CRT 130033-DBM-OI1								
Animal Number	Site	OBSERVED ELEMENTS OF NEW BONE FORMATION						
		Chondroblasts /cytes	Osteoblasts /cytes	Cartilage /osteoid	New Bone	Bone Marrow	Original DBM	Grade (0-4)
7	L	X	X	X	X	X	X	2

TABLE 2: SUMMARY OF PATHOLOGY REPORT - LOT # : CRT 130001-DBM-OI1								
Animal Number	Site	OBSERVED ELEMENTS OF NEW BONE FORMATION						
		Chondroblasts /cytes	Osteoblasts /cytes	Cartilage /osteoid	New Bone	Bone Marrow	Original DBM	Grade (0-4)
8	R	X	X	X	X	X	X	2

TABLE 3: SUMMARY OF PATHOLOGY REPORT - LOT # : CRT 130002-DBM-OI1								
Animal Number	Site	OBSERVED ELEMENTS OF NEW BONE FORMATION						
		Chondroblasts /cytes	Osteoblasts /cytes	Cartilage /osteoid	New Bone	Bone Marrow	Original DBM	Grade (0-4)
9	L	X	X	X	X	X	X	2

TABLE 4: SUMMARY OF PATHOLOGY REPORT - LOT # : CRT 130059-DBM-OI1								
Animal Number	Site	OBSERVED ELEMENTS OF NEW BONE FORMATION						
		Chondroblasts /cytes	Osteoblasts /cytes	Cartilage /osteoid	New Bone	Bone Marrow	Original DBM	Grade (0-4)
10	R	X	X	X	X	X	X	2

TABLE 5: SUMMARY OF PATHOLOGY REPORT - LOT # : CRT 130062-DBM-OI1								
Animal Number	Site	OBSERVED ELEMENTS OF NEW BONE FORMATION						
		Chondroblasts /cytes	Osteoblasts /cytes	Cartilage /osteoid	New Bone	Bone Marrow	Original DBM	Grade (0-4)
11	L	X	X	X	X	X	X	1

TABLE 6: SUMMARY OF PATHOLOGY REPORT - LOT # : CRT 130060-DBM-OI1								
Animal Number	Site	OBSERVED ELEMENTS OF NEW BONE FORMATION						
		Chondroblasts /cytes	Osteoblasts /cytes	Cartilage /osteoid	New Bone	Bone Marrow	Original DBM	Grade (0-4)
12	R	X	X	X	X	X	X	3

TABLE 7: SUMMARY OF PATHOLOGY REPORT - LOT # : CRT 140008-DBM-OI1								
Animal Number	Site	OBSERVED ELEMENTS OF NEW BONE FORMATION						
		Chondroblasts /cytes	Osteoblasts /cytes	Cartilage /osteoid	New Bone	Bone Marrow	Original DBM	Grade (0-4)
13	L	X	X	X	X	X	X	2

KEY:
X: Presence of elements
-: Element not present
L: Left leg
R: Right leg

OSTEOINDUCTIVE IN-VIVO LOT VERIFIED every lot . . . every time

MATRIXCELLECT® 100 DBM PUTTY

IN-VITRO ALKALINE PHOSPHATE INDUCTION ASSAY

ACCESSION NUMBER 14-001869 THRU 14-001875					
MATRIXCELLECT® 100 DBM PUTTY					
	Sample Number	Concentration Tested (mg/well)	Protein Dilution Factor	AP Dilution Factor	Specific Activity AP Units/mg Protein
N/A	BMP Control	N/A	N/A	N/A	15.693
	Cell Lysate Control	N/A	N/A	N/A	<LOQ
14-001869 CRT130033-DBM-OI-2	0001	50	10x	Neat	454.051
14-001870 CRT130002-DBM-OI-2	0001	50	10x	5	406.404
14-001871 CRT130062-DBM-OI-2	0001	50	10x	5	305.704
14-001872 CRT140008-DBM-OI-2	0001	50	10x	5	297.864
14-001873 CRT130001-DBM-OI-2	0001	50	10x	5	348.034
14-001874 CRT130059-DBM-OI-2	001	50	10x	Neat	516.592
14-001875 CRT130060-DBM-OI-2	001	50	10x	5	397.387

MatrixCellec[®] 100 DBM Putty (Table 1) test articles 14-001869, 14-001870, 14-001871, 14-001872, 14-001873, 14-001874, and 14-001875 indicate the Specific Activity AP Units/mg Protein values exceed the BMP control by a factor of up to 33 times greater.

TEST SYSTEM DESCRIPTION

CellRight's MatrixCellec[®] 100 DBM Putty has demonstrated the ability to induce ectopic new bone formation in the soft tissue of experimental animals. Some of this activity can be attributed to the presence of stimulatory proteins, including bone morphogenic proteins (BMPs). BMPs irreversibly induce differentiation of perivascular mesenchymal-type cells into osteoprogenitor cells. BMPs can also act in-vitro to activate a differentiation pathway in the pluripotent myoblast C2C12 cell line. C2C12 cells stimulated by these compounds produce increased levels of alkaline phosphatase. This assay was designed to quantitatively detect the presence of these stimulatory compounds in bone products by their ability to induce alkaline phosphatase activity in C2C12 cell culture.