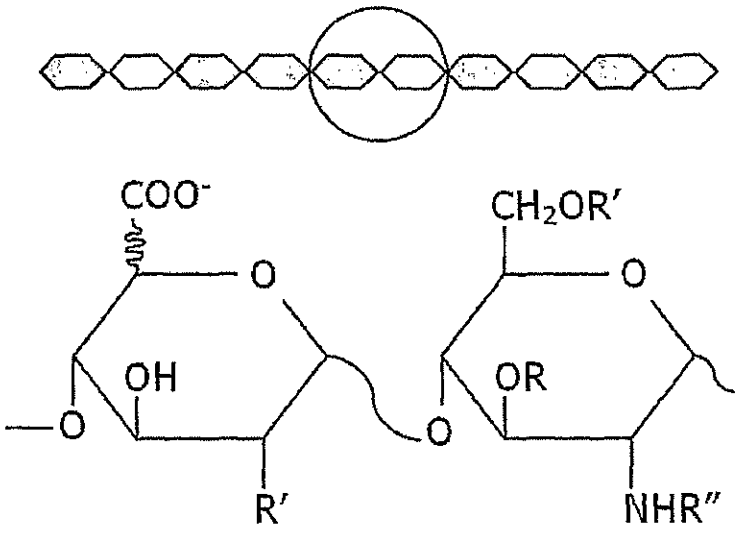


Figure 1

Figure 2

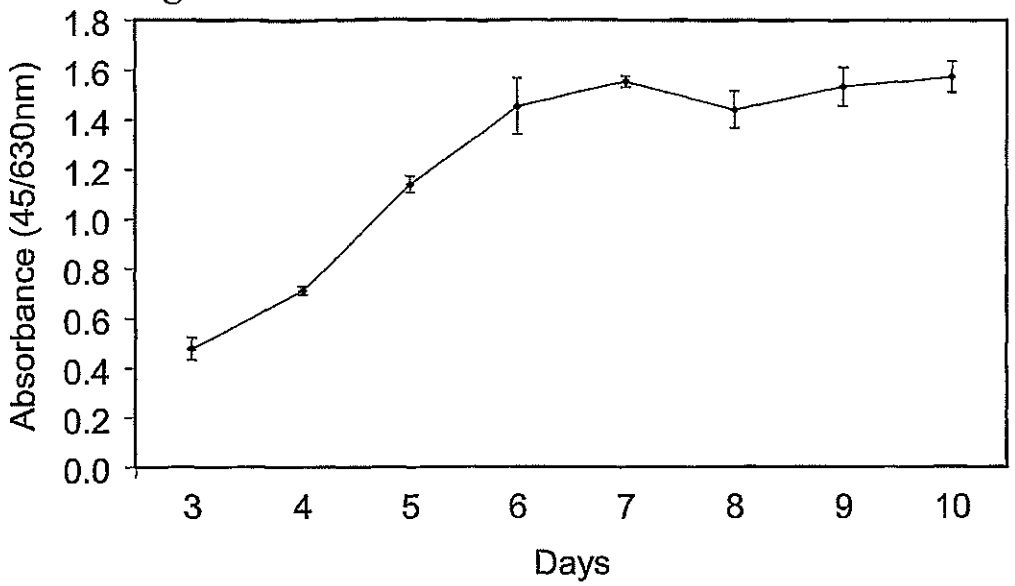


Figure 3

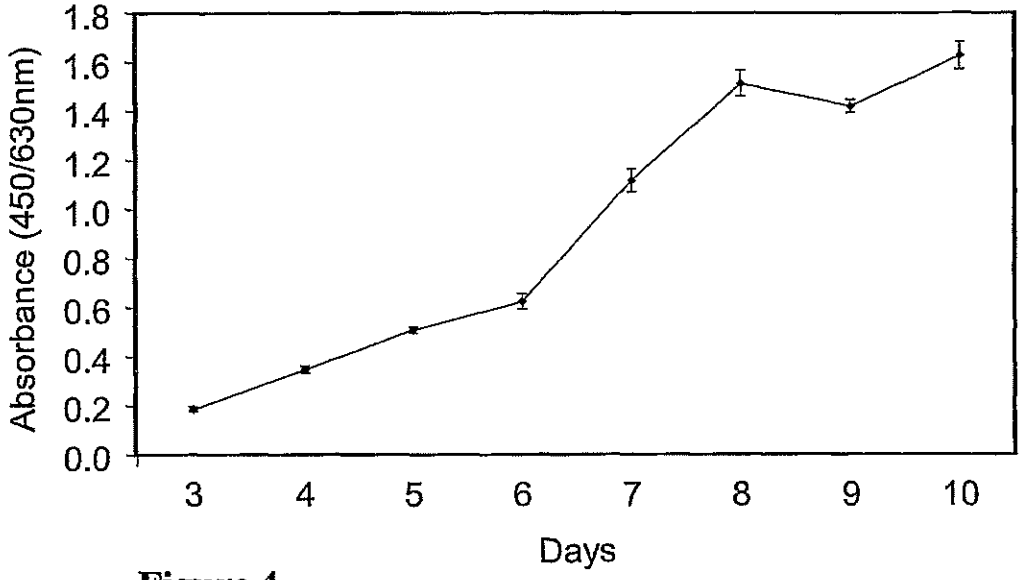


Figure 4

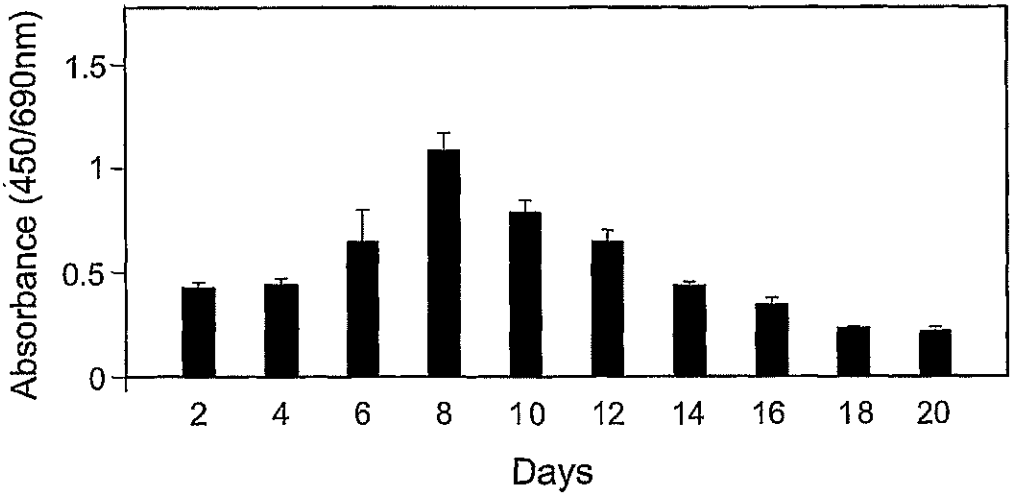


Figure 5

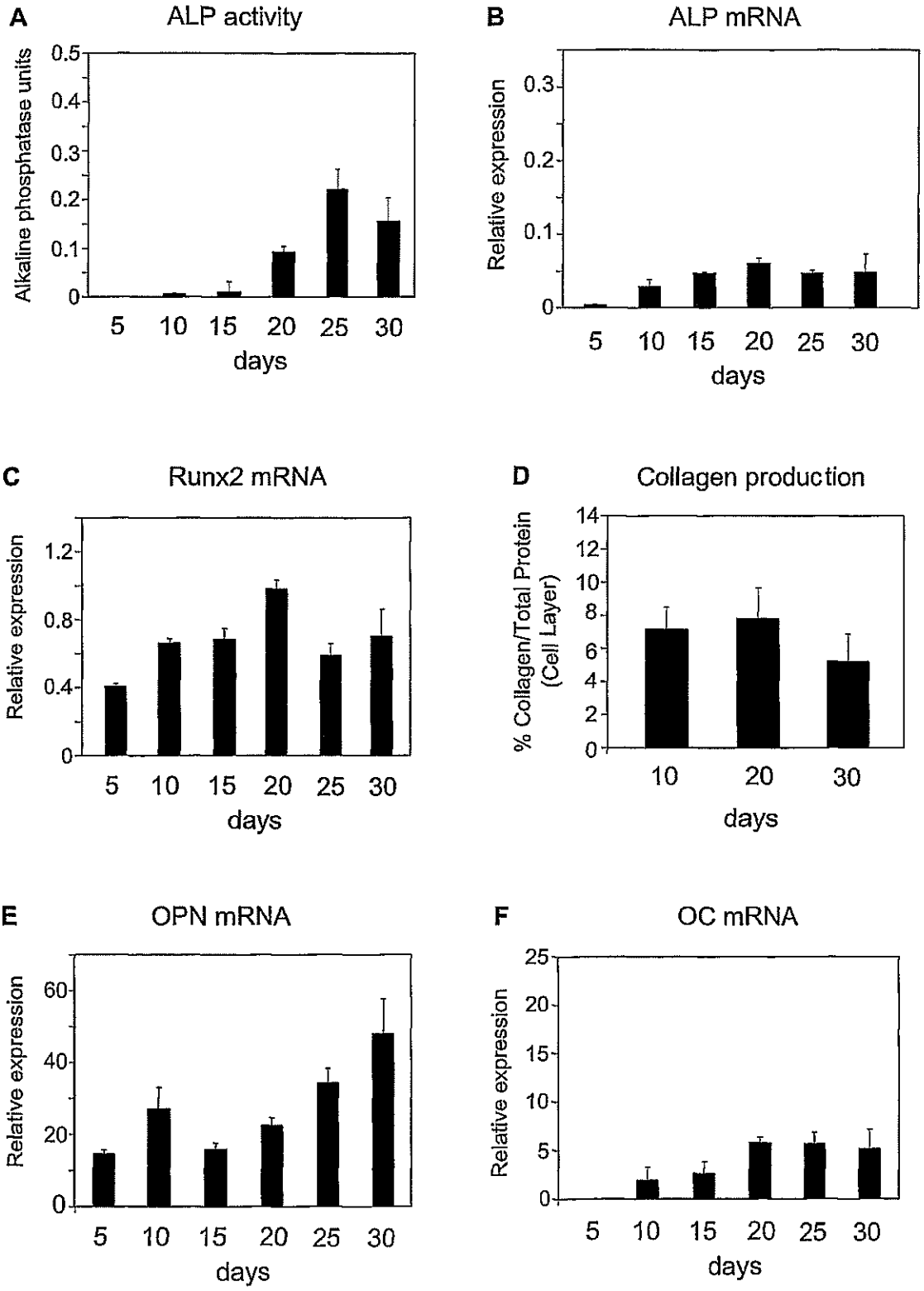

A
ALP activity
Alkaline phosphatase units
0.5
0.4
0.3
0.2
0.1
0
5 10 15 20 25 30
days
B
ALP mRNA
Relative expression
0.3
0.2
0.1
0
5 10 15 20 25 30
days
C
Runx2 mRNA
Relative expression
1.2
0.8
0.4
0
5 10 15 20 25 30
days
D
Collagen production
% Collagen/Total Protein (Cell Layer)
14
12
10
8
6
4
2
0
10 20 30
days
E
OPN mRNA
Relative expression
60
40
20
0
5 10 15 20 25 30
days
F
OC mRNA
Relative expression
25
20
15
10
5
0
5 10 15 20 25 30
days

Figure 6

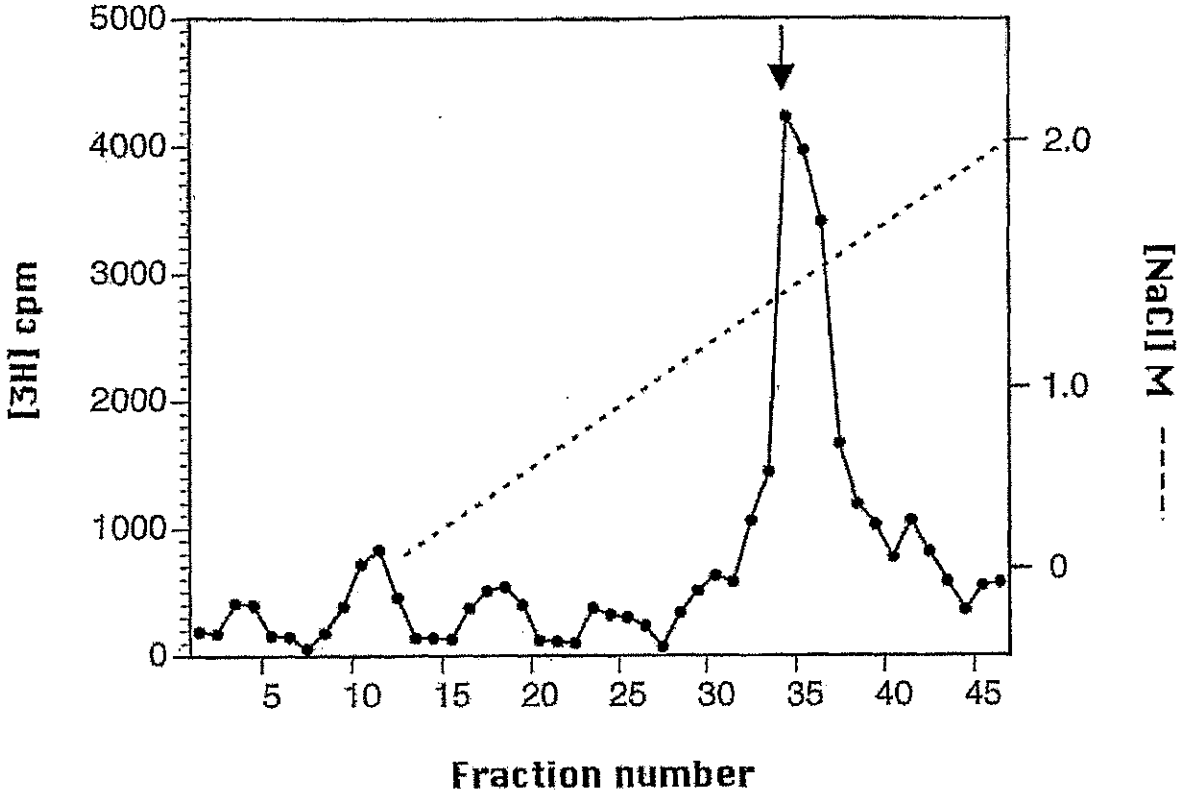

5000
4000
3000
2000
1000
0
[3H] cpm
2.0
1.0
0
[NaCl] M
5
10
15
20
25
30
35
40
45
Fraction number

Figure 7

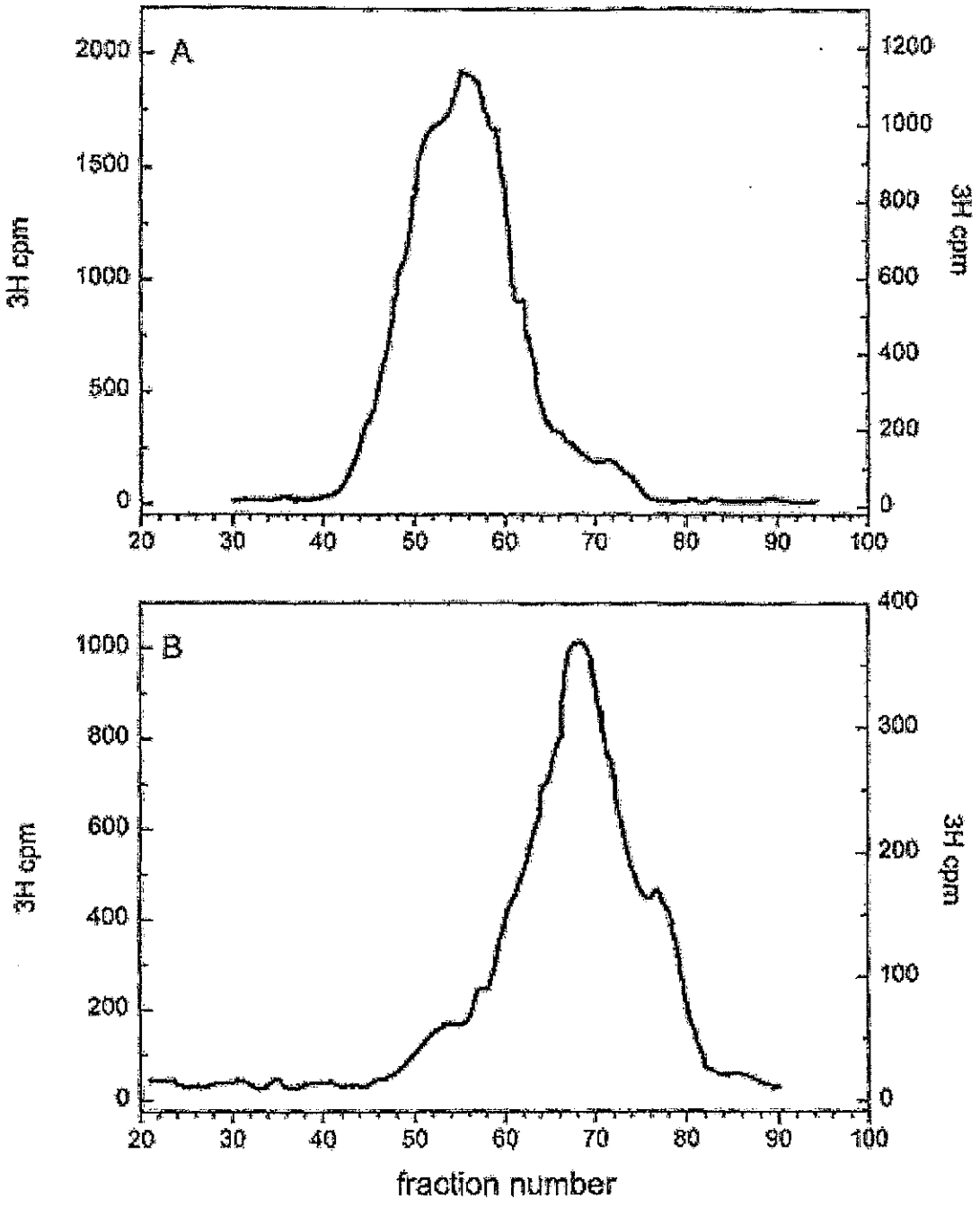

A
B
3H cpm
3H cpm
3H cpm
3H cpm
fraction number
2000
1500
1000
500
0
1200
1000
800
600
400
200
0
1000
800
600
400
200
0
400
300
200
100
0
20
30
40
50
60
70
80
90
100

Figure 8

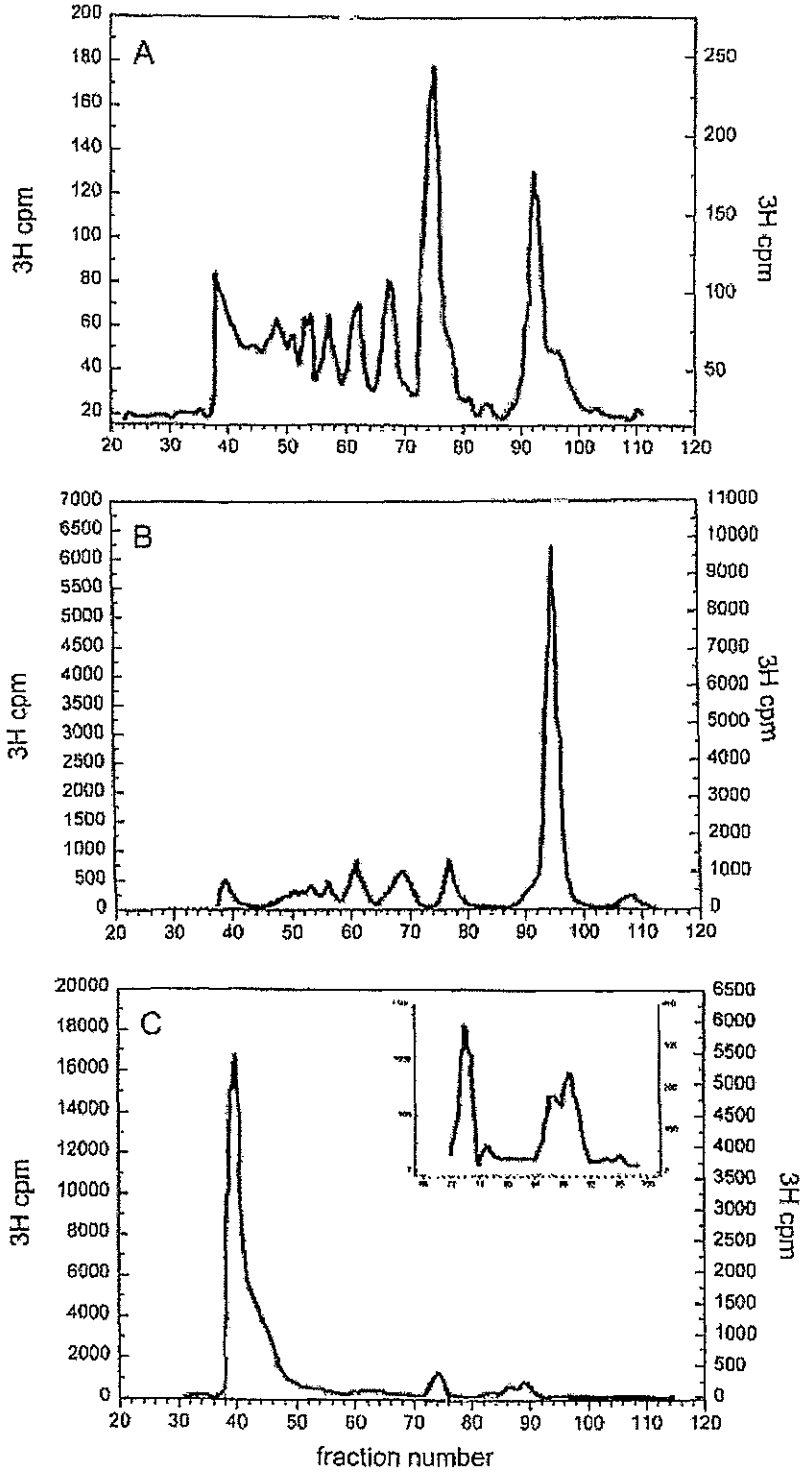


Figure 9

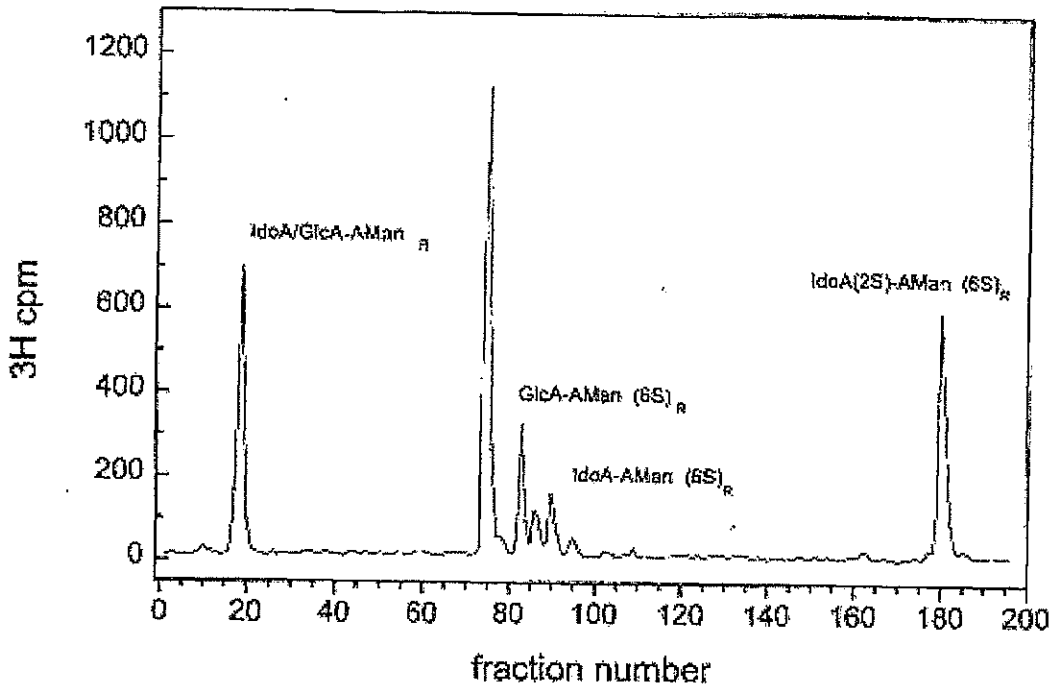


Figure 10

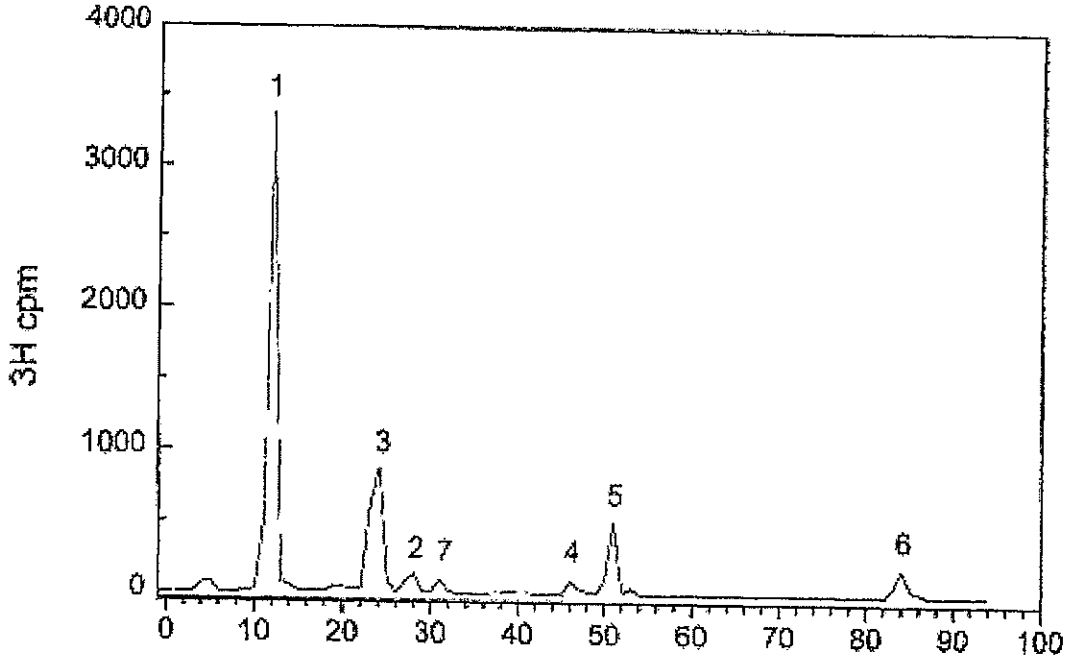


Figure 11

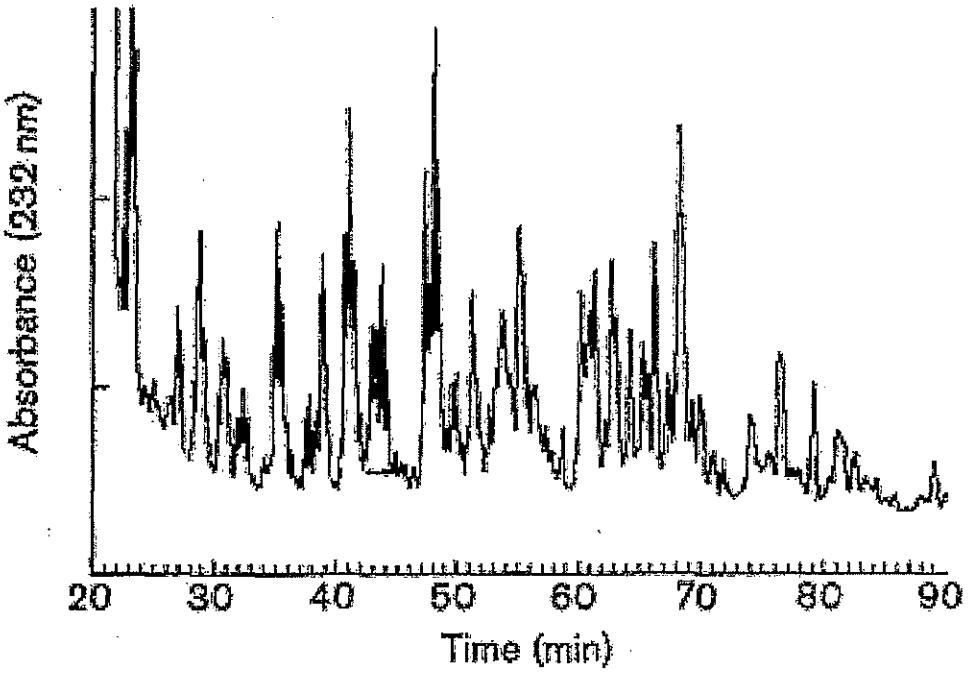


Figure 12

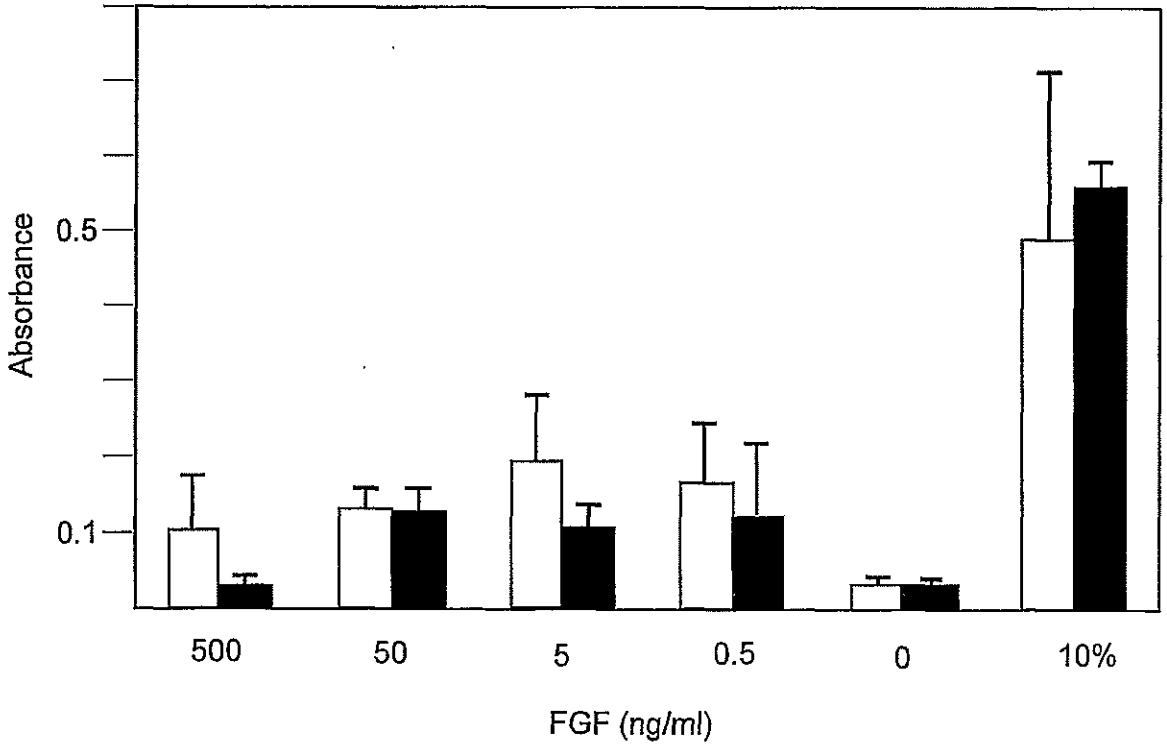


Figure 13

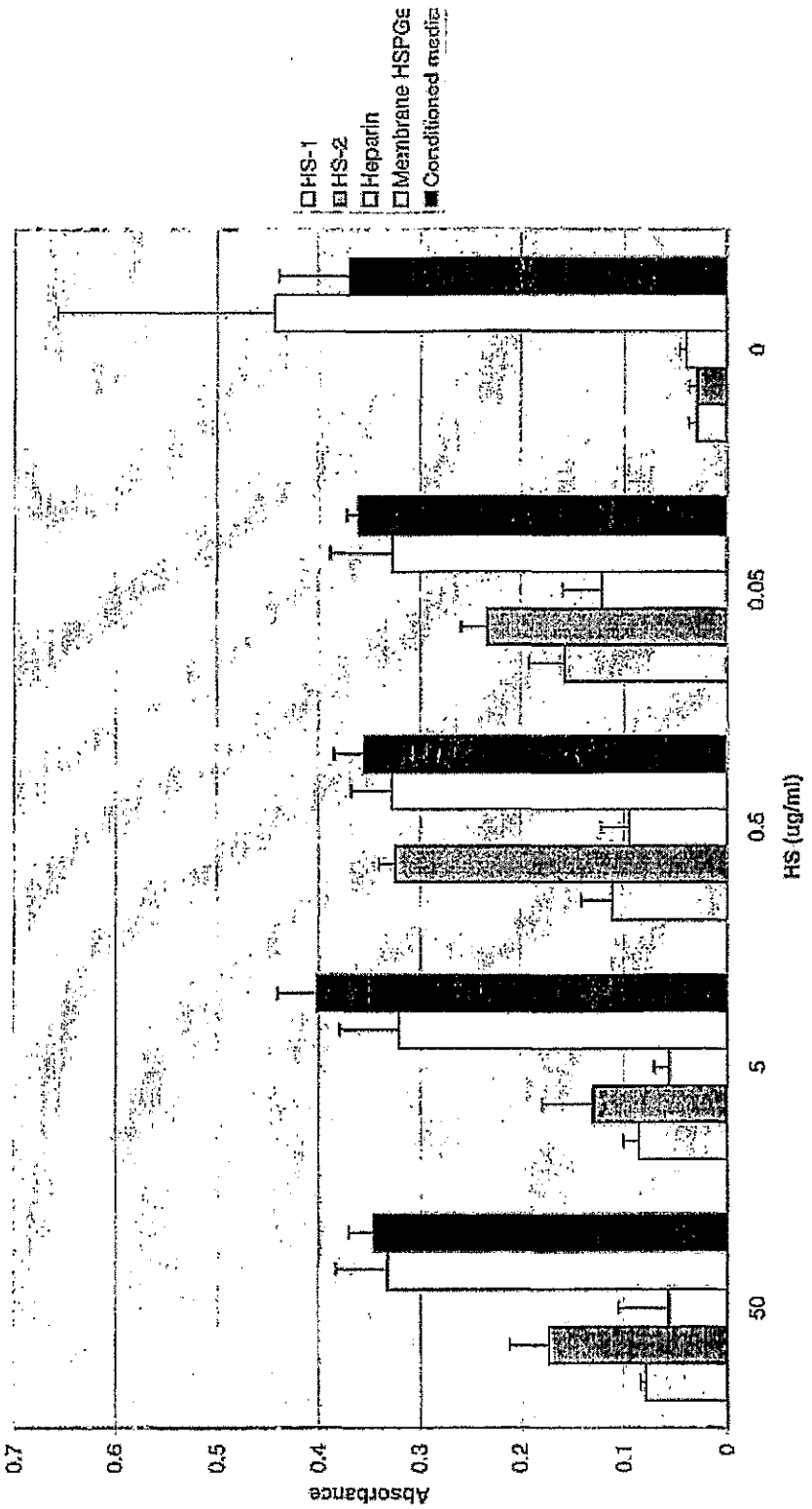

HS-1
HS-2
Heparin
Membrane HSPGs
Conditioned media
Absorbance
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50
5
0.5
0.05
0
HS (ug/ml)

Figure 14

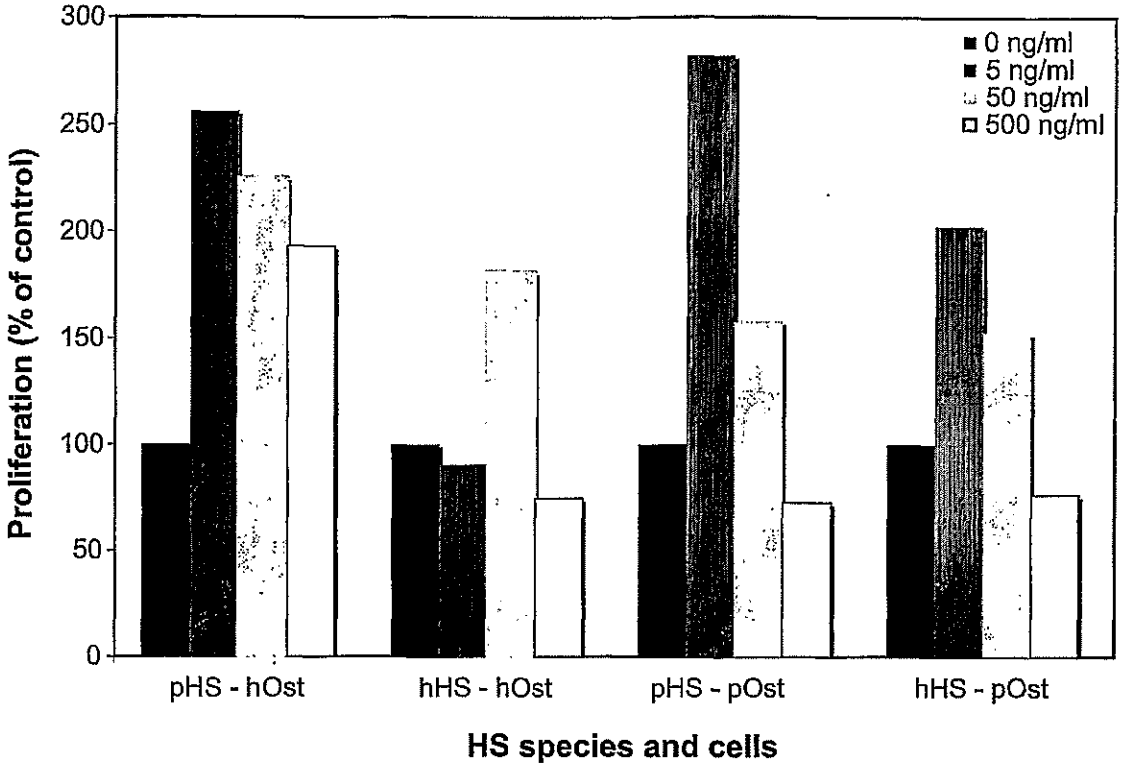


Figure 15

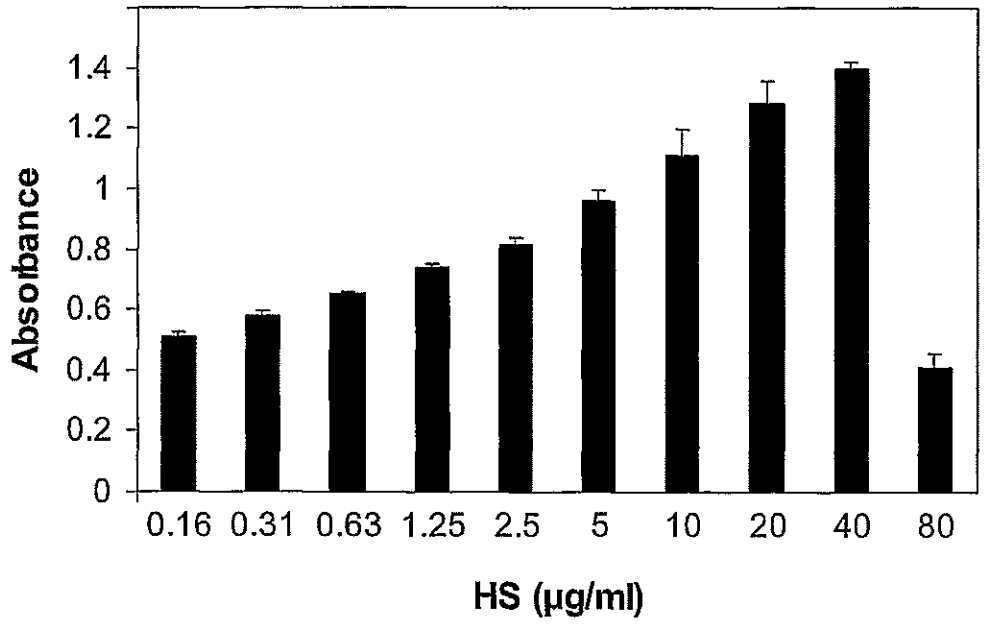


Figure 16

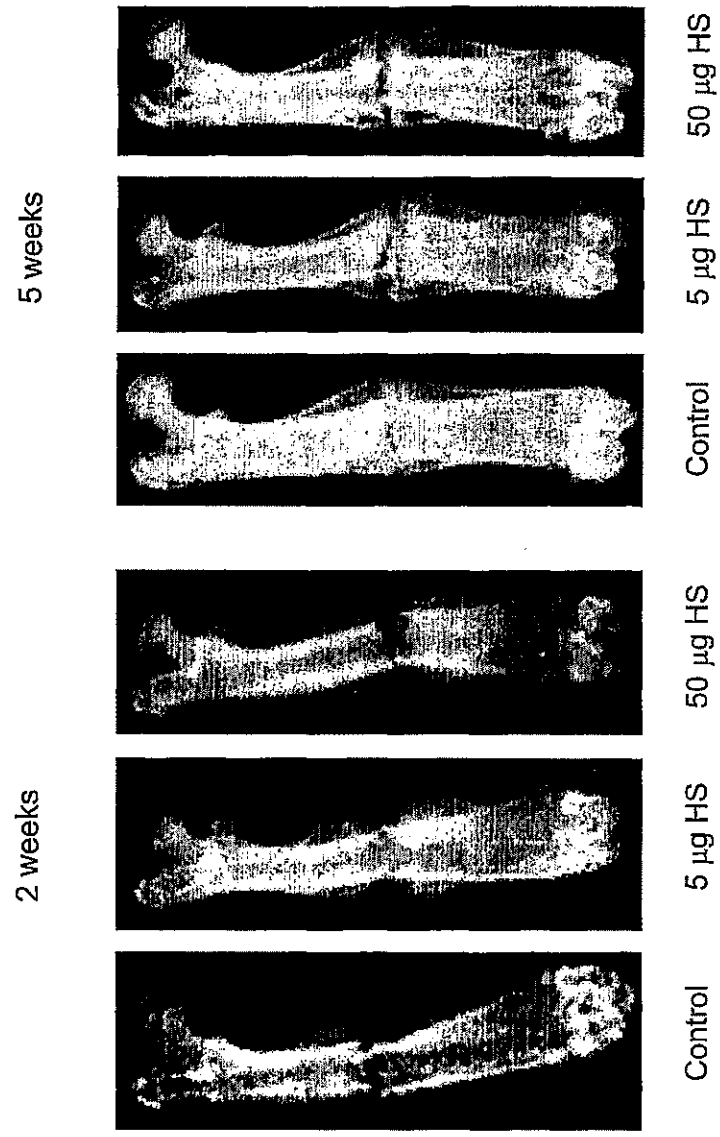


Figure 17

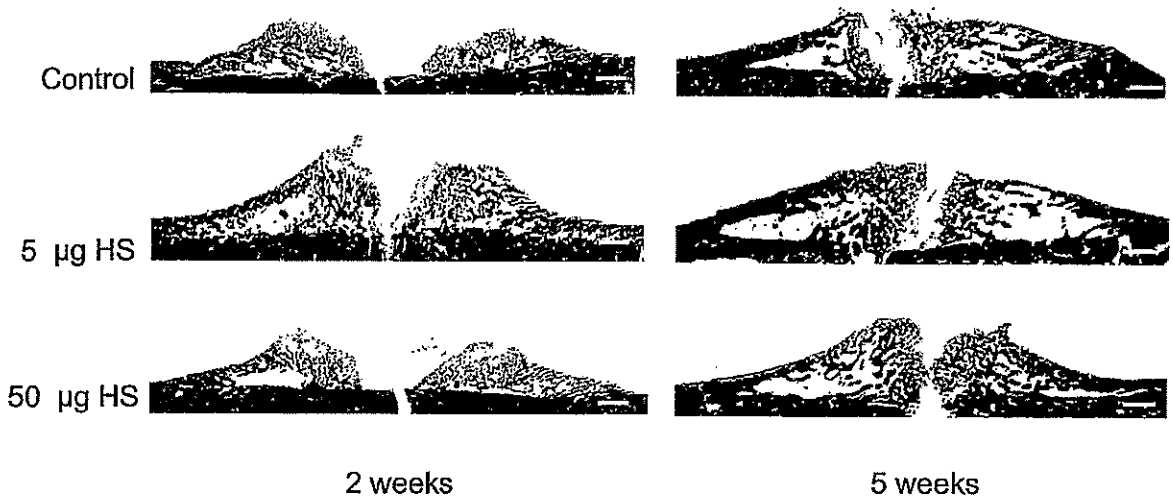


Figure 18

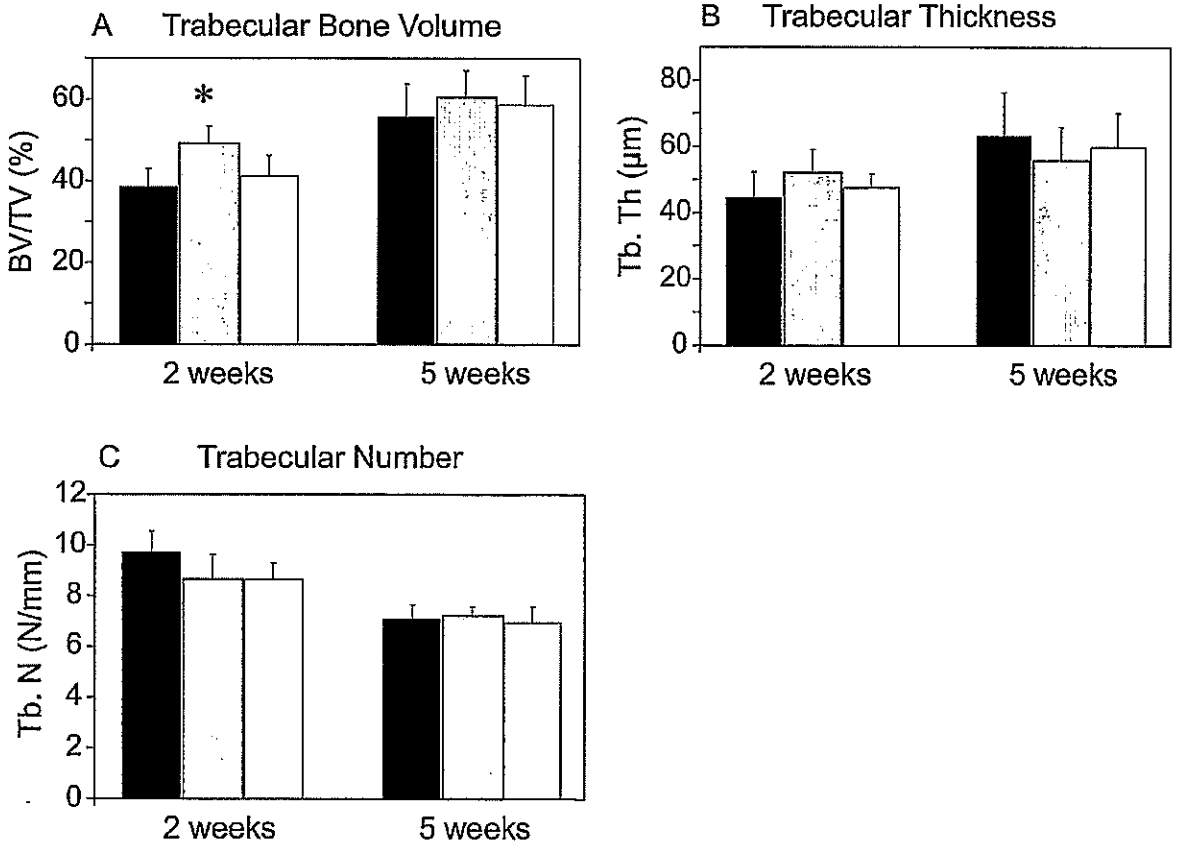


Figure 19

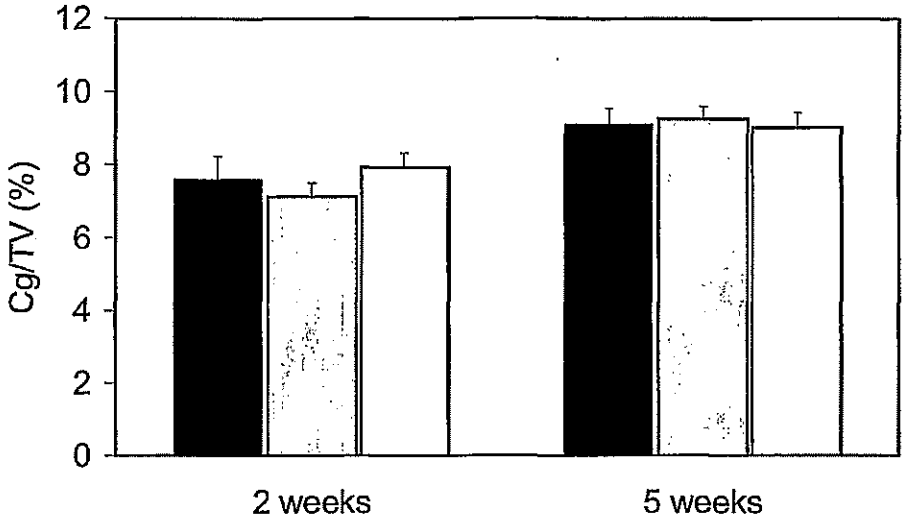


Figure 20

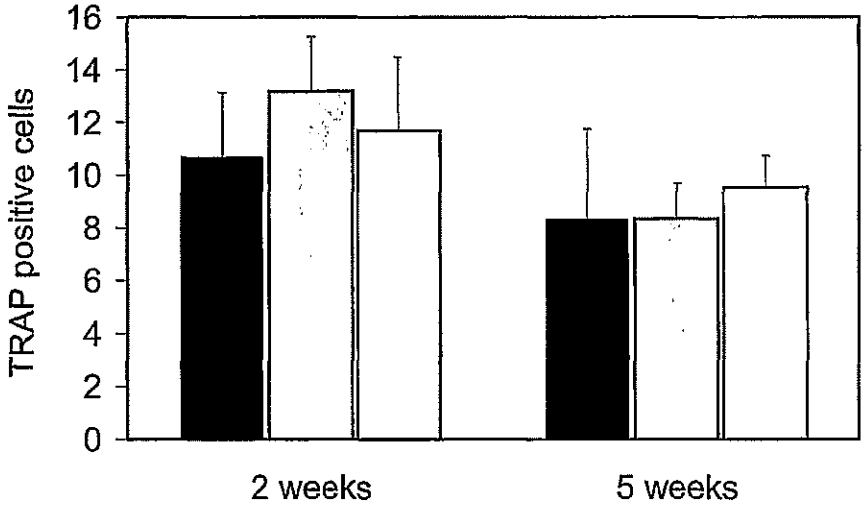


Table I

Disaccharide	GAG (%)
IdoA/GlcA-AMan$_R$	24.2
IdoA(2S)-AMan$_R$	27.6
GlcA-AMan$_R$(6S)	9.7
IdoA-AMan$_R$(6S)	5.4
IdoA(2S)-AMan$_R$(6S)	23
GlcA(2S)-AMan$_R$	1.9
GlcA-AMan$_R$(3S)	nd
GlcA- AMan$_R$(3,6S)	nd
UNKNOWN	8.0

Table II

Peak number	Disaccharide	GAG (%)
1	ΔHexUA-GlcNAc	50.7
3	ΔHexUA-GlcNSO$_3$	19.1
2	ΔHexUA-GlcNAc(6S)	4.7
7	ΔHexUA(2S)-GlcNAc	2.6
4	ΔHexUA-GlcNSO$_3$(6S)	2.8
5	ΔHexUA(2S)-GlcNSO$_3$	9.1
8	ΔHexUA(2S)-GlcNAc(6S)	0
6	ΔHexUA(2S)-GlcNSO$_3$(6S)	5.8
9	Unknown	5.1

Table III

	Adenoma	Carcinoma
UA-GlcNAc	51	54
UA-GlcNS	16	14
UA-GlcNAc(6S)	12	16
UA(2S)-GlcNAc	2	2
UA-GlcNS(6S)	6	6
UA(2S)-GlcNS	10	4
UA(2S)-GlcNAc(6S)	0	0
UA(2S)-GlcNS(6S)	3	4
%*N*-sulfation	35	28
% 2-*O*-sulfation	15	10
% 6-*O*-sulfation	21	26
No. sulfates/100 disaccharides	73	61

Table IV

	2 weeks			5 weeks		
	Saline	**5 µg HS**	**50 µg HS**	**Saline**	**5 µg HS**	**50 µg HS**
AP	7.24 ± 0.663	8.91 ± 0.89 *	6.70 ± 0.389	6.21 ± 1.10	6.342 ± 0.89	6.26 ± 0.802
Lat	7.51 ± 1.42	6.78 ± 1.02	7.45 ± 1.24	6.98 ± 1.22	6.79 ± 0.912	7.33 ± 0.984