

## *List of Figures*

<i>Figures</i>	<i>Title</i>	<i>Page No</i>
1.1	Schematization of a collagen $\alpha$ chain triple helix segment.	7
1.2	The ultra-structure of collagen type I	7
1.3	Deformities in small joints of rheumatoid arthritis	37
2.1	Yield of total collagen (%) from the skin of six species of fishes on dry weight basis	53
2.2	Relative solubility of grouper skin collagen at different pH	54
2.4	SDS PAGE Analysis	58
2.5	SDS PAGE Analysis	58
2.6	UV analysis of pure collagen from calf skin	59
2.7	UV analysis of tuna skin collagen	59
2.8	UV analysis of Rohu skin collagen	59
2.9	UV analysis of shark skin collagen	59
2.10	UV analysis of queen fish skin collagen	60
2.11	UV analysis of grouper skin collagen	61
2.12	FTIR spectra of queen fish skin collagen	61
2.13	FTIR spectra of grouper skin collagen	62
2.14	FTIR spectra of Shark skin collagen	56
3.1	Mega heal ointment and the hydrogel prepared	70
3.2.A	Photographic representation of measurement of wound area in excised rat	70
3.2.B	Collagen application in wounded area	70
3.3	Changes in wound area during the course of experimental period	74
3.4	Percent wound contraction for the in vivo wound healing experiments	74

3.5	Percent re-epithelialization for the in vivo wound healing experiments	75
3.6	Wound healing profile of control group without any treatment	76
3.7	Wound healing profile of collagen hydrogel treated group	76
3.8	Histopathological examination of newly formed wound tissue on 15th day	78
3.9.A	Estimation of Hexosamine	78
3.9.B	Estimation of Collagen	73
4.1.A	The effect of enzyme concentration on the degree of hydrolysis	93
4.1.B	The effect of reaction time on the degree of hydrolysis	93
4.2	Pepsin: Effects of different variables on the degree of hydrolysis presented in response surface plots	101
4.3	Papain: Effects of different variables on the degree of hydrolysis presented in response surface plots	102
4.4	Protease: Effects of different variables on the degree of hydrolysis presented in response surface plots	103
4.5.A	Whole fish from landing centre	105
4.5.B	Purified skin	105
4.5.C	Extracted collagen	105
4.5.D	Freeze dried collagen peptide	105
4.6	Tricine SDS PAGE pattern of collagen hydrolysate	108
4.7	Mass spectra obtained for standard Calmix peptide mixture	109
4.8	Mass spectra obtained for Collagen hydrolysate	109
5.1	Experimental design of arthritis study	120
5.2	Morphological representations of rat paw	129
5.3	Morphological representations of rat paw after the	129

	treatment period	
5.4	Mean paws edema change over time	130
5.5	Mean body weight change over time	133
5.6	Changes in arthritic score over time	133
5.7	Effect of treatment on biochemical parameters of adjuvant arthritic rats	136
5.8	Effect of treatment on COX activity in adjuvant arthritic rats	141
5.9	Radiographic changes in joints of control and treated rats	143
5.10	Histopathological changes in tibiotarsal joints	145
5.11	Histopathological changes in tibiotarsal joints	146
6.1	Human osteoblast cells in culture dishes	158
6.2	Photographs of the HOS cells after the different lengths of incubation time	158
6.3	159	150
6.4.A	Collagen quantified at different time intervals through Sirius red staining	161
6.4.B	Collagen quantified at different FCP concentrations through Sirius red staining	161
6.5.A	Western blotting using antibodies against type 1 collagen	162
6.5.B	Western blotting: Densitometric analysis	162
6.6	Immunocytochemical visualization of type 1 collagen (green fluorescence pericellularly) secreted by HOS cells	164