

LIST OF FIGURES

Figure No.	Figure Caption	Page No.
Figure 2.1	The chemical structure of Piroxicam	10
Figure 3.1	Experimental rat	22
Figure 3.2(a)	STEP 1- Focal cerebral ischemia was induced by middle cerebral artery occlusion (MCAo)	23
Figure 3.2(b)	STEP 2- Focal cerebral ischemia was induced by middle cerebral artery occlusion (MCAo)	23
Figure 3.2(c)	STEP 3- Focal cerebral ischemia was induced by middle cerebral artery occlusion (MCAo)	24
Figure 3.3	Surgical procedures	24
Figure 3.4(a)	Neurological deficit score was found at 10mg/kg dose of Piroxicam (* vs control & ** vs stroke)	26
Figure 3.4(b)	Representative TTC stains brain sections	27
Figure 3.4(c)	Effect of different doses of piroxicam on cerebral infarct volume of rat following 1/24hr I/R injury (* vs control & ** vs stroke)	28
Figure 3.5	Coronal sections of rat brain (2mm thick each)	29
Figure 3.6	Infarct volume calculation by Image J software	30
Figure 3.7(a)	Neurological deficit score was found at 30 min pre-treatment (* vs control & ** vs stroke)	31
Figure 3.7(b)	TTC stained 2 mm coronal rat brain sections of Control, Stroke and Piroxicam (10 mg/kg b.w) treated with 1/24 h I/R injury	32

Figure 3.7(c)	Infarct volume was found at 30 min pre-treatment (* vs control & ** vs stroke)	33
Figure 3.8	Experimental rat groups on rota rod test	35
Figure 3.9	Values are mean \pm SEM. Each groups consist of 8 rats	36
Figure 4.1	EEG signal recording accessories and data acquisition system	41
Figure 4.2(a)	Control rat brain EEG waveforms of Frontoparietal, Occipital and Temporal region	43
Figure 4.2(b)	Power Spectrum Density of Control rat brain EEG signal	43
Figure 4.3(a)	Stroke rat brain EEG waveforms of Frontoparietal, Occipital and Temporal region	44
Figure 4.3(b)	Power Spectrum Density of Stroke rat brain EEG signal	44
Figure 4.4(a)	Drug induced rat brain EEG waveforms of Frontoparietal, Occipital and Temporal region	45
Figure 4.4(b)	Power Spectrum Density of drug induced rat brain EEG signal	45
Figure 4.5	Graph of PSD values of Frontoparietal region vs different rhythms expressed as mean \pm SD	46
Figure 4.6	Graph of PSD values of Occipital region vs different rhythms expressed as mean \pm SD	47
Figure 4.7	Graph of PSD values of Temporal region vs different rhythms expressed as mean \pm SD	48
Figure 4.8	Graph of recovery of different rat brain regions after drug administration	49
Figure 4.9	Graph of PSD values of Frontoparietal region vs different	54

	rhythms expressed as mean \pm SD	
Figure 4.10	Graph of PSD values of Occipital region vs different rhythms expressed as mean \pm SD	55
Figure 4.11	Graph of PSD values of Temporal region vs different rhythms expressed as mean \pm SD	56
Figure 4.12(a)	Lyapunov Exponents of control rat brain EEG from fronto-parietal region	59
Figure 4.12(b)	Lyapunov Exponents of Stroke rat brain EEG from fronto-parietal region	60
Figure 4.12(c)	Lyapunov Exponents of drug induced rat brain EEG from fronto-parietal region	61
Figure 4.13(a)	Lyapunov Exponents of control rat brain EEG from occipital region	62
Figure 4.13(b)	Lyapunov Exponents of stroke rat brain EEG from occipital region	63
Figure 4.13(c)	Lyapunov Exponents of drug induced rat brain EEG from occipital region	64
Figure 4.14(a)	Lyapunov Exponents of control rat brain EEG from temporal region	65
Figure 4.14(b)	Lyapunov Exponents of stroke rat brain EEG from temporal region	66
Figure 4.14(c)	Lyapunov Exponents of drug induced rat brain EEG from temporal region	67

Figure 4.15	Correlation dimension of frontoparietal region rat brain EEG signal	70
Figure 4.16	Correlation dimension of occipital region rat brain EEG signal	71
Figure 4.17	Correlation dimension of temporal region rat brain EEG signal	72
Figure 4.18(a)	Autocorrelation Dimension of frontoparietal region control rat brain EEG signal	75
Figure 4.18(b)	Autocorrelation Dimension of frontoparietal region stroke rat brain EEG signal	76
Figure 4.18(c)	Autocorrelation Dimension of frontoparietal region drug induced rat brain EEG signal	77
Figure 4.19(a)	Autocorrelation Dimension of occipital region control rat brain EEG signal	78
Figure 4.19(b)	Autocorrelation Dimension of occipital region stroke rat brain EEG signal	79
Figure 4.19(c)	Autocorrelation Dimension of occipital region drug induced rat brain EEG signal	80
Figure 4.20(a)	Autocorrelation Dimension of temporal region control rat brain EEG signal	81
Figure 4.20(b)	Autocorrelation Dimension of temporal region stroke rat brain EEG signal	82
Figure 4.20(c)	Autocorrelation Dimension of temporal region drug induced rat brain EEG signal	83
Figure 4.20(d)	Extraction of DWT Coefficients via convolution	86
Figure 4.20(e)	Wavelet decomposition steps	86

Figure 4.20(f)	Hierarchical decomposition of signal s	87
Figure 4.20(g)	Snapshot of wavemenu GUI	89
Figure 4.21(a)	Discrete wavelet transformation of frontoparietal region control rat brain EEG signal	90
Figure 4.21(b)	Histogram of wavelet coefficients (d1-d4) of frontoparietal region control rat brain EEG signal	91
Figure 4.21(c)	Histogram of wavelet approximation (a4) of frontoparietal region control rat brain EEG signal	91
Figure 4.22(a)	Discrete wavelet transformation of frontoparietal region stroke rat brain EEG signal	92
Figure 4.22(b)	Histogram of wavelet coefficients (d1-d4) of frontoparietal region stroke rat brain EEG signal	93
Figure 4.22(c)	Histogram of wavelet approximation (a4) of frontoparietal region stroke rat brain EEG signal	93
Figure 4.23(a)	Discrete wavelet transformation of frontoparietal region drug induced rat brain EEG signal	94
Figure 4.23(b)	Histogram of wavelet coefficients (d1-d4) of frontoparietal region drug induced rat brain EEG signal	95
Figure 4.23(c)	Histogram of wavelet approximation (a4) of frontoparietal region drug induced rat brain EEG signal	95
Figure 4.24(a)	Discrete wavelet transformation of occipital region control rat brain EEG signal	96
Figure 4.24(b)	Histogram of wavelet coefficients (d1-d4) of occipital region	97

	control rat brain EEG signal	
Figure 4.24(c)	Histogram of wavelet approximation (a4) of occipital region	97
	control rat brain EEG signal	
Figure 4.25(a)	Discrete wavelet transformation of occipital region	98
	stroke rat brain EEG signal	
Figure 4.25(b)	Histogram of wavelet coefficients (d1-d4) of occipital region	99
	stroke rat brain EEG signal	
Figure 4.25(c)	Histogram of wavelet approximation (a4) of occipital region	99
	stroke rat brain EEG signal	
Figure 4.26(a)	Discrete wavelet transformation of occipital region	100
	drug induced rat brain EEG signal	
Figure 4.26(b)	Histogram of wavelet coefficients (d1-d4) of occipital region	101
	drug induced rat brain EEG signal	
Figure 4.26(c)	Histogram of wavelet approximation (a4) of occipital region	101
	drug induced rat brain EEG signal	
Figure 4.27(a)	Discrete wavelet transformation of temporal region	102
	control rat brain EEG signal	
Figure 4.27(b)	Histogram of wavelet coefficients (d1-d4) of temporal region	103
	control rat brain EEG signal	
Figure 4.27(c)	Histogram of wavelet approximation (a4) of temporal region	103
	control rat brain EEG signal	
Figure 4.28(a)	Discrete wavelet transformation of temporal region	104
	stroke rat brain EEG signal	

Figure 4.28(b)	Histogram of wavelet coefficients (d1-d4) of temporal region stroke rat brain EEG signal	105
Figure 4.28(c)	Histogram of wavelet approximation (a4) of temporal region stroke rat brain EEG signal	105
Figure 4.29(a)	Discrete wavelet transformation of temporal region drug induced rat brain EEG signal	106
Figure 4.29(b)	Histogram of wavelet coefficients (d1-d4) of temporal region drug induced rat brain EEG signal	107
Figure 4.29(c)	Histogram of wavelet approximation (a4) of temporal region drug induced rat brain EEG signal	107
Figure 4.30(a)	Neural network training phase	115
Figure 4.30(b)	Performance plot of Neural network	116
Figure 4.30(c)	Training state plot of Neural network	117