

CHAPTER-1

Table 1.1: Comparison of RTI dosage form and small volume injections9

CHAPTER-2

Table 2.1: Dose of OXT in human.....26

Table 2.2: Dose & uses of different OXT injections in human in various regulatory markets27

Table 2.3: OXT to manage neurological ailments: Clinical summary42

Table 2.4: Patent insights on use of OXT in neurological disorders44

Table 2.5: Clinical and preclinical studies of Vasopressin56

Table 2.6: Preclinical studies of Angiotensin for neurological disorders71

Table 2.7: Clinical studies of Angiotensin for neurological disorders79

Table 2.8: Recent advancements in nanocarriers mediated delivery of biomacromolecules.92

Table 2.9: Nanotechnologies used so far to target the brain and treat neurological conditions99

CHAPTER-3

Table 3.1: Raw materials, chemicals and reagents employed in the current research work133

Table 3.2: Details of various instruments employed during the current research work .139

Table 3.3: Chromatographic conditions for oxytocin140

Table 3.4: Peak areas at different concentrations of OXT for constructing the calibration plot144

Table 3.5: Accuracy in measuring a known concentration of OXT146

Table 3.6: Validation for intra- and inter-day precision146

LIST OF TABLES

Table 3.7: Chromatographic conditions.....	148
Table 3.8: Peak areas at different concentrations of Vasopressin for constructing the calibration plot	151
Table 3.9: Accuracy in measuring a known concentration of vasopressin	153
Table 3.10: Validation for intra- and inter-day precision	153
Table 3.11: Chromatographic condition for Angiotensin-II	155
Table 3.12: Peak areas at different concentrations of Angiotensin for constructing the calibration plot	158
Table 3.13: Accuracy in measuring a known concentration of Angiotensin II	159
Table 3.14: Validation for intra- and inter-day precision	159
<u>CHAPTER-4</u>	
Table 4.1: Raw materials, chemicals and reagents employed in the current research work.....	162
Table 4.2: Details of various instruments employed during current research work	163
Table 4.3: Details of Packaging materials used in RTI formulation.....	165
Table 4.4 : Initial data of various preliminary developmental trials	165
Table 4.5: Initial data of various preliminary development trials for selection of Osmogens for Oxytocin	167
Table 4.6: Development trials for selection of excipients for Oxytocin RTI	169
Table 4.7: pH study data of experimental trials.....	173
Table 4.8: Effect of sterilization process on the Oxytocin RTI formulation by autoclaving.....	176
Table 4.9: Short term stability data of optimized Oxytocin RTI formulation	178
Table 4.10: Experimental data of freeze thaw cycle study	180

LIST OF TABLES

Table 4.11: Effect of different gases on Oxytocin assay	181
Table 4.12: Effect of light on assay of Oxytocin	183
Table 4.13: Stainless steel (SS316L) compatibility data at room temperature (~20-25°C).....	184
Table 4.14: Filter membrane compatibility data at room temperature (~20-25°C)	185
Table 4.15: Stability data of Oxytocin injection RTI 0.02 IU/mL.....	188
Table 4.16: Stability data of Oxytocin injection 0.08 IU/mL	192
Table 4.17: Drug Product CQAs.....	199
Table 4.18: Shelf-life estimation of developmental batches of Oxytocin RTI @ 25°C/40%RH	201
Table 4.19: Shelf-life estimation of developmental batches of Oxytocin RTI @ 5 ± 3°C... ..	202
Table 4.20: Development trials with different osmogens for Vasopressin RTI formulation.....	203
Table 4.21: Trials with HPβCD for Vasopressin RTI formulation.....	205
Table 4.22: pH study data of experimental trials (Vasopressin).....	205
Table 4.23: Effect of sterilization process on the Vasopressin RTI formulation.....	207
Table 4.24: Effect of light on Vasopressin RTI.....	208
Table 4.25: Stability of formulations in infusion bags at initial stage and after 12M at different temperature conditions (Batch 1)	211
Table 4.26: Stability of formulations in infusion bags at initial stage and after 12M at different temperature conditions (Batch 2)	212
Table 4.27: Shelf life estimation of developmental batches of Vasopressin RTI @ 25°C/40%RH	222

LIST OF TABLES

Table 4.28: Shelf life estimation of developmental batches of Vasopressin RTI @5 ± 3°C.	223
Table 4.29: Development trials with different osmogens for angiotensin RTI formulation.....	224
Table 4.30: pH study data of experimental trials (Angiotensin).....	227
Table 4.31: Effect of sterilization process on the Angiotensin-II RTI formulation.....	228
Table 4.32: Effect of light on Angiotensin-II RTI.....	228
Table 4.33: Stability of final formulation in infusion bags at initial stage and after 12M at different temperature conditions	231
Table 4.34: Stability of final formulation in infusion bags at initial stage and after 12M at different temperature conditions (Batch 2)	234
Table 4.35: Shelf life estimation of developmental batches of Angiotensin II RTI @ 25°C/40%RH	240
Table 4.36: Shelf life estimation of developmental batches of Angiotensin II RTI @ 5 ± 3°C	241
Table 4.37: Reactivity grades for agarose diffusion test.....	243
Table 4.38: Outcomes of Biological reactivity study	244

CHAPTER-5

Table 5.1: List of raw materials and chemicals used in the current research work	251
Table 5.2: Details of various instruments employed during the current research work	252
Table 5.3: The information of the primer sequences for all genes	262
Table 5.4: Primers of Genes for qRT-PCR with their role in brain	266
Table 5.5: Optimization of ratio of lipids for oxytocin loaded lioposomes formulation	269

LIST OF TABLES

Table 5.6: Optimization with respect to stirring speed for oxytocin loaded liposomes formulation.....	269
Table 5.7: Optimization of stirring time for oxytocin loaded liposomes formulation..	270
Table 5.8: Optimized parameters for oxytocin loaded liposomes formulation.....	270
Table 5.9: Optimization with respect to ratio of lipids used cholesterol ratio for vasopressin loaded liposomes formulation	271
Table 5.10: Optimization with respect to stirring speed for vasopressin loaded liposomes formulation	271
Table 5.11: Optimization of stirring time for vasopressin loaded liposomes formulation.....	272
Table 5.12: Optimized parameters for Liposomes for Vasopressin.....	272
Table 5.13: Physicochemical attributes of optimised Oxytocin and Vasopressin loaded liposomes	272
Table 5.14: Stability data of Oxytocin loaded liposomes	274
Table 5.15: Stability data of Liposomes for Vasopressin	274

CHAPTER-6

Table 6.1: List of raw materials and chemicals used in the current research work.....	301
Table 6.2: Details of various instruments employed during the current research work.....	302
Table 6.3: Primers of Genes for qRT-PCR with their role in brain	312
Table 6.4: Observations from NMR spectra of Oxytocin.....	313
Table 6.5: Observations from NMR spectra of AEEA-Oxytocin.....	314
Table 6.6: Major Peaks observed in MS spectra.....	314