

PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00

EFFECTIVE DATE:

PAGE No:1 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

PROCESS VALIDATION REPORT FOR

TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

EFFECTIVE DATE OF REPORT		
SUPERSEDE REPORT No.	Nil	
VALIDATION BATCH NUMBERS		
VALIDATION BATCH SIZE		
BATCH MFG. DATE		
BATCH EXP. DATE		



PRODUCTION DEPARTMENT

PROTOCOL No.: REVISION No.: 00

EFFECTIVE DATE:

PAGE No:2 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

REPORT CONTENTS

S.No.	TITLE	PAGE No.
1.	REPORT PRE APPROVAL	3
2.	OBJECTIVE	4
3.	SCOPE	4
4.	RESPONSIBILITY	4-5
5.	REASON FOR REVALIDATION	5
6.	PRE-REQUISITE	6
6.1	TRAINING RECORDS	6
6.2	MASTER DOCUMENT VERIFICATION	7
6.3	EQUIPMENT DETAILS	8
7.	RAW MATERIALS AND PRIMARY PACKING MATERIALS DISPENSING VERIFICATION	9
7.1	RAW MATERIALS VERIFICATION	9
7.2	PACKING MATERIALS VERIFICATION	10
8.	CRITICAL PROCESS VARIABLES NON CRITICAL PROCESS VARIABLES	10
8.1	CRITICAL PROCESS VARIABLES	10-15
8.2	NON CRITICAL PROCESS VARIABLES	16
9.	VISUAL INSPECTION	17
10.	CRITICAL QUALITY ATTRIBUTES	18
10.1	CLEANING OF EQUIPMENTS	18
10.2	WATER FOR INJECTION	19
10.3	PREPARATION OF BULK SOLUTION	19-20
10.4	FILTRATION OF BULK SOLUTION	21
10.5	BEFORE AMPOULE WASHING	21
10.6	AMPOULES WASHING AND STERILIZATION	22-23
10.7	AMPOULES FILLING & SEALING	23-25
10.8	FINISHED PRODUCT	26-27
11.	LABELLING AND PACKING RESULTS & OBSERVATIONS	28
12.	ATTACHMENTS	29
13.	DEVIATION (IF ANY)	30
14.	SUMMARY & CONCLUSION	30
15.	RECOMMENDATION	30
16.	ABBREVIATIONS	31
17.	REVISION HISTORY	31
18.	REPORT POST APPROVAL	32



PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No · 00

EFFECTIVE DATE:

PAGE No:3 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

1.0 REPORT PRE -APPRO)VA	L:
-----------------------	-----	----

PREPARED BY:

DESIGNATION	NAME	SIGNATURE	DATE
OFFICER/EXECUTIVE (QUALITY ASSURANCE)			

REVIEWED BY:

DESIGNATION	NAME	SIGNATURE	DATE
EXECUTIVE/MANAGER (QUALITY ASSURANCE)			
HEAD (QUALITY CONTROL)			
HEAD (MICROBIOLOGY)			
HEAD (PRODUCTION)			
HEAD (ENGINEERING)			

APPROVED BY:

DESIGNATION	NAME	SIGNATURE	DATE
HEAD (QUALITY ASSURANCE)			



PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00

EFFECTIVE DATE:

PAGE No:4 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

2.0 OBJECTIVE:

- The objective of this report is to validate the manufacturing process for the Tranexamic Acid Injection BP 100 mg/ml (500 mg in 5 ml) manufactured at the ampoule line.
- This study shall be conducted for the generation of sufficient data to establish documentary evidence
 that the manufacturing process including dispensing, CIP/SIP, bulk preparing, filtration, filling,
 sealing, visual inspection and packing process is suitable and appropriate for its intended purpose and
 validated process shall consistently meet the predefined specifications and quality attributes of the
 finished product.

3.0 SCOPE:

- The scope of this report is to validate the manufacturing process of Tranexamic Acid Injection BP 100 mg/ml (500 mg in 5 ml) ampoule manufactured at Ampoule Line.
- Type of validation: Concurrent validation

4.0 **RESPONSIBILITY:**

DEPARTMENT	RESPONSIBILITIES		
	1. Responsible to prepare, review and approve process validation report.		
	2. To co-ordinate with cross functional teams to support the process validation execution and also responsible to monitor the execution of process validation.		
Quality Assurance	3. Ensure that the facility/equipment's/instruments and utilities conform to the validated/calibrated state prior to the execution of process validation.		
	4. To review the trends/statistical evaluation for Critical Process Parameters (CPP) / Critical Quality Attributes (CQA) for every product manufactured at the site.		
	To perform Process validation sampling as per sampling plan and submit them to Quality Control Department.		
IPQA	2. To monitor, verify and record critical process attributes.		
	3. To record and report any deviation either planned or unplanned happened during batch manufacturing.		
	1. Responsible to review process validation report.		
QC	2. To analyze the samples as per sampling plan during process validation and to maintain the records of the test results followed by the reporting of the results.		



PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00

EFFECTIVE DATE:

PAGE No:5 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

DEPARTMENT	RESPONSIBILITIES		
	3. Review of analytical data & submission of analytical results to QA.		
Microbiology	 Responsible to review process validation report. Responsible to collect sample as per process validation protocol. To analyze the samples as per sampling plan during process validation and to maintain the records of the test results followed by the reporting of the results. Review & submission of results to QA. 		
Production	 Responsible to review process validation report. Ensure that the current effective version of SOP's, Batch Records etc. are implemented and Concerned Personnel are trained. Prior to execution of process validation batch to ensure that facility / equipment / instruments & utilities are in validated / calibrated state. Execution of process validation and collection of routine in-process samples as defined in the batch manufacturing record. 		

5.0 REASON FOR REVALIDATION:

- Any major change in the manufacturing process which may affect the quality of the product.
- Any change in the batch size.
- Any change in the batch formula.
- Change in manufacturing site.
- Any modification in any critical equipment.
- Any major modification in the related utility system.
- Other

Any change in the specification and/or change in the source of active pharmaceutical ingredient (API).

.....



PRODUCTION DEPARTMENT

PROT	OCOL	No.:
------	------	------

REVISION No.: 00

EFFECTIVE DATE:

PAGE No:6 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

6.0	PRE-REQUISIT	$\Gamma \mathbf{E}$:
-----	--------------	-----------------------

6.1 TRAINING RECORDS:

S.No.	Name of Trainee	Department	Designation	Acceptance Criteria	Signature of Trainee	Checked by QA (Sign & Date)
1.						
2.						
3.						
4.						
5.				All personnel involved in		
6.				execution of this		
7.				protocol shall be trained in the		
8.				required procedure and		
9.				shall be documented		
10.				documented		
11.						
12.						
13.						
14.						

ame (of the Trainer:				
nferen					
			D	J D	
			Revie Quali (Sign	wed By ty Assurance & Date)	2



PRODUCTION DEPARTMENT

PROTOCOL No.: **REVISION No.:** 00

EFFECTIVE DATE:

PAGE No:7 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

6.2	.2 MASTER DOCUMENT VERIFICATION:						
S.No.	Description		Document No.		Complied By QA (Sign & Date)		
1.	Master Formula Record						
2.	Batch Manufacturing Reco	ord					
3.	Batch Packing Record						
S.No.	Stage		Raw material pecification No.	Raw material STP No.	Complied By QA (Sign & Date)		
1.	Raw material						
S.No.	Stage		ry packing material pecification No.	Primary packing material STP No.	Complied By QA (Sign & Date)		
1.	Primary Packing Material						
S.No.	Stage	In-pr	ocess Specification No.	In-process STP No.	Complied By QA (Sign & Date)		
1.	Bulk Solution						
S.No.	Stage		nished Product pecification No.	Finished Product STP No.	Complied By QA (Sign & Date)		

1.	Finished Product		
Infere	nce:		

Reviewed By	
Quality Assurance	
(Sign & Date)	



PRODUCTION DEPARTMENT

PRO	TO	COL	No.:

REVISION No.: 00 **EFFECTIVE DATE:**

PAGE No:8 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

6.3 EQUIPMENT DETAILS:-

Name of Equipment / Machine	Make	Identification No.	Calibration/Qualification Status
Mixing Vessel			
Holding Vessel			
Ampoule washing machine			
Ampoule Filling & Sealing Machine			
Sterilization and Depyrogenating tunnel			
Automatic Optical Inspection machine			
Dynamic pass box			
Dynamic pass box			
LAF for Ampoule-2			
Buffer Vessel			
Visual inspection booth			
Autoclave			
Leak Test Apparatus			
Inference:			
		Qua	viewed By ality Assurance gn & Date)



PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No.: 00

EFFECTIVE DATE:

PAGE No:9 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

	7.0	RAW MATERIALS & PRIM	ARY PACKING MATERIAL	A DISPENSING VERIFICATION
--	-----	----------------------	----------------------	---------------------------

7.1 RAW MATERIALS VERIFICATION

(I) Dispensed Quantity Verification:

S.No.			Dispensed Qty.	
Name of Ingredient		Batch No.:	Batch No.:	Batch No.:
9 1 11 1		Date:	Date:	Date:
1.	Tranexamic Acid BP			
2.	Disodium Edetate BP			
3.	Sodium Hydroxide BP			
Complied By QA (Sign & Date)				

(II) A. R. No. Verification:

S.No.		A. R. No.		
Name of Ingredient		Batch No.:	Batch No.:	Batch No.:
		Date:	Date:	Date:
1.	Tranexamic Acid BP			
	Complied By QA (Sign & Date)			

(III) Approved Manufacturer of API:

S.No.		Approved Manufacturer			
Name of Ingredient		Batch No.:	Batch No.:	Batch No.:	
		Date:	Date:	Date:	
1. Tranexamic Acid BP					
Complied By QA (Sign & Date)					



Informace

PHARMA DEVILS

PRODUCTION DEPARTMENT

PROTOCOL No.: 00

EFFECTIVE DATE:

PAGE No:10 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

7.2 PACKING MATERIALS VERIFICATION:

(I) Dispensed Quantity Verification & Approved Vendor of PPM Verification:

S.No.		Dispensed Qty./ Approved Manufacturer			
	Name of material	Batch No.:	Batch No.:	Batch No.:	
1.	Clear Glass Ampoules 5 ml USP Type – I with Blue dot (OPC)				
	mplied By QA Sign & Date)				

mierence.	
	Reviewed By
	Quality Assurance
	(Sign & Date)

8.0 CRITICAL PROCESS VARIABLES & NON CRITICAL PROCESS VARIABLES:

- **8.1** Critical Process Variables:
- **8.1.1 Dispensing of Raw Material:**

G4	D	X7 1.1	Batch No.	
Stage	Process	Variables		
	Temperature	NMT 25°C		
Dispensing	RH %	NMT 55%		
	Balance Verification	on		
Complied By (QA (Sign. / Date)			
Verified By Q	A (Sign. / Date)			

8.1.2 Sterilization of Equipments:

64	Equipment	D	V		Batch No.	
Stage	Name	Process	Process Variables			
	2.51	Sterilization time	e (NLT 30 mins.)			
Sterilization	Mixing Vessel	Sterilization	Min.			
of	V C55C1	temp.	Max.			
Equipment's	Holding	Sterilization time	e (NLT 30 mins.)			
	Vessel	Sterilization	Min.			



PRODUCTION DEPARTMENT

PROTOCOL No.: REVISION No.: 00

EFFECTIVE DATE:

PAGE No:11 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

C4	Equipment	D	. .		Batch No.	
Stage	Name	Process	Process Variables			
		Temp.	Max.			
		Sterilization tin	ne (NLT 30 mins.)			
	m/c parts	Sterilization	Min.			
		temp.	Max.			
Complied By	v QA (Sign. /	Date)	•			
Verified By	QA (Sign. / D	Pate)				
				1		I.

Inference:		

8.1.3 Preparation of Bulk Solution:

Ctoro	Equipment	Duocesa Vowishles	Batch No.	
Stage	Name	Process Variables		
		Zero Reading observation		
Vessel Load cell	Mixing Vessel	Reading after addition of Standard Weight		
Verification	Vesser	Reading after removal standard weight (should be zero)		
		Date of manufacturing		
		Capacity of mixing vessel		
		Temperature (before adding API)		
Preparation		Final pH		
of Bulk	Mixing Vessel	Mixing Speed		
Solution	Vesser	Mixing time		
		Final Volume makeup		
		Clarity of Solution		
		Date of sampling		
Complied By	QA (Sign. /	Date)		
Verified By (QA (Sign. / D	ate)		

Inference:	 	 	



PRODUCTION DEPARTMENT

PROTOCOL No.: 00

EFFECTIVE DATE:

PAGE No:12 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

8.1.4 Filtration of Bulk Solution:

G.	Equipment		Batch No.	
Stage	Name	Process Variables		
		Filter Type		
		Make		
		Filter Pore Size		
		Filter Integrity of primary filter (Pre) (Limit – 3172 mbar to 5000 mbar)		
Filtration of Bulk	Cartridge Filter	Filter Integrity of primary filter (Post) (Limit – 3172 mbar to 5000 mbar)		
Solution		Filter Integrity of Secondary filter (Pre) (Limit – 3172 mbar to 5000 mbar)		
		Filter Integrity of Secondary filter (Post) (Limit – 3172 mbar to 5000 mbar)		
		Filtration Pressure		
		Filtration time		
Complied	By QA (Sign	/ Date)		
Verified B	y QA (Sign.	/ Date)		
Verified B	y QA (Sign.	/ Date)		

Inference:		 	

8.1.5 Ampoules Washing & Sterilization:

Ctoro	Equipment	Dunnaga Variablaa		Batch No.
Stage	Name	Process Variables		
		Clarity of Ampoules		
		Compressed air pressure	Min.	
		Limit (0.20 MPa– 0.60MPa)	Max.	
	Ampoule	Recycled WFI-1 pressure	Min.	
Ampoules washing	washing	Limit (0.20 MPa– 0.50MPa)	Max.	
	machine	Recycled WFI-2 pressure	Min.	
		Limit (0.12 MPa-0.50MPa)	Max.	
		Fresh WFI	Min.	
		Limit (0.07MPa – 0.30MPa)	Max.	



PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00 **EFFECTIVE DATE:**

PAGE No:13 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

Ctore	Equipment	D.,	Process Variables		Batch No.	
Stage	Name	Pr	ocess variables			
			Preheating	Min.		
			Zone to room (05 to 10) Pa	Max.		
		Differential	Heating zone to	Min.		
		Pressure in (Pa)	room (06 to 12)Pa	Max.		
			Cooling zone to	Min.		
	Sterilization		room (05 to10) Pa	Max.		
Ampoule Sterilization	and Depyrogena	D.	Preheating	Min.		
Stermzation	tig tunnel	in °C	zone	Max.		
			Heating zone (More than 320°C)	Min.		
		Temperature		Max.		
		mpe	Cooling zone	Min.		
		Te	(NMT 30°C)	Max.		
		Speed of Cor	nveyor (NMT110 ı	mm/min)		
Complied By	y QA (Sign. / D	ate)				
	QA (Sign. / Dat					

8.1.6 Hold Time Study:

Inference:

Store	Equipment	Process Variables	Batch No.		
Stage	Name	Process variables			
	Cleaned	Cleaning End Time			
	Mixing	Sterilization Start Time			
	Vessel	Total Hold Time			
	Cleaned Holding Vessel	Cleaning End Time			
After Cleaning		Sterilization Start Time			
,g		Total Hold Time			
	Cleaned	Cleaning End Time			
	Machine	Sterilization Start Time			
	Parts	Total Hold Time			
After	Sterile	Sterilization Cycle End Time			



PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00

EFFECTIVE DATE:

PAGE No:14 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

Equipment	Drooss Variables	Batch No.		
Name	Frocess variables			
Garments	Garments Uses Time			
	Total Hold Time			
Sterilized	Sterilization Cycle End Time			
Mixing	Manufacturing Start Time			
Vessel	Total Hold Time			
Sterilized Holding Vessel	Sterilization Cycle End Time			
	Filtration Start Time			
	Total Hold Time			
Sterilized	Sterilization Cycle End Time			
Machine	Filling Start Time			
Parts	Total Hold Time			
Complied By	y QA (Sign. / Date)			
Verified By	QA (Sign. / Date)			
	Sterilized Mixing Vessel Sterilized Holding Vessel Sterilized Holding Vessel Sterilized Machine Parts Complied By	NameProcess VariablesGarmentsGarments Uses TimeTotal Hold TimeSterilization Cycle End TimeMixing VesselManufacturing Start TimeSterilized Holding VesselSterilization Cycle End TimeSterilization Start TimeFiltration Start TimeTotal Hold TimeSterilization Cycle End TimeSterilized Machine PartsSterilization Cycle End TimeFilling Start Time	Name Garments Garments Uses Time Total Hold Time Sterilized Mixing Vessel Sterilized Holding Vessel Sterilization Cycle End Time Total Hold Time Sterilized Holding Vessel Sterilization Cycle End Time Filtration Start Time Total Hold Time Sterilized Total Hold Time Sterilized Machine Parts Sterilization Cycle End Time Filling Start Time Total Hold Time	Name Garments Garments Uses Time Total Hold Time Sterilized Mixing Vessel Sterilized Holding Vessel Sterilization Cycle End Time Total Hold Time Sterilized Holding Vessel Sterilization Cycle End Time Filtration Start Time Total Hold Time Sterilized Holding Vessel Sterilization Cycle End Time Filtration Start Time Total Hold Time Sterilized Machine Parts Sterilization Cycle End Time Filling Start Time Total Hold Time Total Hold Time Complied By QA (Sign. / Date)

	Holding	Filtration Start Time		
	Vessel	Total Hold Time		
	Machine Parts	Sterilization Cycle End Time		
		Filling Start Time		
	Parts	Total Hold Time		
	Complied B	y QA (Sign. / Date)		
	Verified By	QA (Sign. / Date)		
Inference:			'	•



Inference:___

PHARMA DEVILS

PRODUCTION DEPARTMENT

PROTOCOL No.: 00

EFFECTIVE DATE:

PAGE No:15 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

8.1.7 Filling & Sealing of Ampoules:

C4	Equipment	Process Variables				Batch No.	
Stage	Name						
		Target fill volume 5.1 m (Limit 5.05 ml to 5.15 m					
		Nitrogen Pressure					
E:11: 0	Ampoule	Sealing Height 69 ± 2 m	m M	n.			
Filling & Sealing	Line Filling & Sealing Machine	Limit (67 mm to 71 mm)		ıx.			
		Sealing Quality					
		M 1' C 1	Min.				
		Machine Speed					
	Complied By QA (Sign. / Date)						
	Verified By QA (Sign. / Date)						
	Verified By QA (Sign. / Date)						

Stage	Equipment	Process Variables	Batc	h No.	
Stage	Name				
	Leak test	Vacuum Hold Time			
	Leak test	Observation			
illing & Sea	ling Yield				
omplied By	QA (Sign. /	Date)			
erified By (QA (Sign. / D	Pate)			
ference:				·	

Reviewed By_______Quality Assurance (Sign & Date)



PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00 **EFFECTIVE DATE:**

PAGE No:16 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

8.2 NON CRITICAL PROCESS VARIABLES:

Stage Equipment		ess Variables	Batch No.		
Name	Proce	ess variables			
	Process	From			
T 1 11:	Time	То			
Machine Machine	Machine	Minimum			
	Speed	Maximum			
	Label p	orinting quality			
	Process	From			
	Time	То			
Blister machine	Tray pack Forming temperature (135°C to 155°C)				
	Machine Speed	Minimum			
		Maximum			
Packing	LabPac	elling k style and pack			
	Finished Sample Qty.				
Total Packing Yield					
By QA (Sign	n. / Date)				
y QA (Sign.	/ Date)				
	Labelling Machine Blister machine Packing ing Yield By QA (Sign	Process Time Labelling Machine Speed Label p Process Time Process Time Process Time Anachine Process Time Finishe	Process From Time To Machine Minimum Speed Maximum Label printing quality Process From Time To Process From Time To Tray pack Forming temperature (135°C to 155°C) Machine Minimum Speed Maximum Overprinting details Labelling Packing Pack style and pack size Finished Sample Qty. Ing Yield By QA (Sign. / Date)	Process Time To Machine Speed Maximum Label printing quality Process Time To Process From Time To To Blister Tray pack Forming temperature (135°C to 155°C) Machine Speed Maximum Overprinting details Labelling Pack style and pack size Finished Sample Qty. ing Yield By QA (Sign. / Date)	Process Time To Machine Machine Speed Maximum Label printing quality Process Time To To Blister machine Tray pack Forming temperature (135°C to 155°C) Machine Speed Minimum Maximum Maximum Maximum Auximum Maximum Maximum Packing Finished Sample Qty. ing Yield By QA (Sign. / Date)

Quality Assurance (Sign & Date)	
	Reviewed By Quality Assurance (Sign & Date)



PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00

EFFECTIVE DATE:

PAGE No:17 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

9.0 VISUAL INSPECTION:

S.No.	Observations / Defects	Batch No.			
D11 (U)	Social various / Delects				
1.	Date				
2.	Start Time:				
3.	Completion Time:				
4.	Black Particles				
5.	White Particles				
6.	Improper Sealing				
7.	Others				
8.	Total Qty. Rejected				
9.	Total Qty. Checked				
10.	Good Ampoules				
Rejection	n Yield (%)				
Complie (Sign./Da	d By QA ate)				
Verified (Sign. / I	By QA				
Inference					
		Reviewed By Quality Assu (Sign & Date	rance		



PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No.: 00
EFFECTIVE DATE:
PAGE No: 18 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

10.0 CRITICAL QUALITY ATTRIBUTES:

10.1 Cleaning of Equipments:

64	Equipment	D			Batch No.	
Stage	Name	Process Parameter	Acceptance Criteria			
		Description	Clear colourless liquid			
	Wash Water	Clarity	Should be clear			
	from Mixing Vessel	pН	5.0 to 7.0			
	, 68861	Conductivity	NMT 1.3 μS/cm			
	Wash Water from Holding Vessel	Description	Clear colourless liquid			
Cleaning of		Clarity	Should be clear			
Equipment's		pН	5.0 to 7.0			
		Conductivity	NMT 1.3 μS/cm			
		Description	Clear colourless liquid			
	Rinse / Swab	Clarity	Should be clear			
	from m/c parts	pН	5.0 to 7.0			
	1	Conductivity	NMT 1.3 μS/cm			
Complied By	QA (Sign. / Dat	te)				
Verified By (A (Sign. / Date)				
Inference:				l l		

Inference:



PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No.: 00
EFFECTIVE DATE:
PAGE No: 19 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

10.2 Water for Injection:

Stago	Equipment Name	Process Parameter	A acentomas Cuitouis	Batch No.		
Stage	tage Equipment Name	Frocess Farameter	Acceptance Criteria			
		Description	Clear colourless liquid			
Water	Mixing Vessel (Before Batch Manufacturing)	рН	5.0 to 7.0			
for Injection		Conductivity	NMT 1.3 μS/cm			
		BET	NMT 0.25 EU/ml			
Complied	By QA (Sign. / Dat	re)				
Verified 1	By QA (Sign. / Date))				

Inference:



PRODUCTION DEPARTMENT

	PROTOCOL No.:
	REVISION No.: 00
Ī	EFFECTIVE DATE:
	PAGE No: 20 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

10.3 Preparation of Bulk Solution:

Stage	Equipment	Process Parameter	Acceptance Criteria	Batch No.
	Name			
	D 11 34' '	Description	A Clear, colorless solution.	
	Bulk Mixing after 15 min.	рН	6.7 to 7.8	
	(Top)	Assay	97.00 mg to 105.00 mg (97.0% to 105.0% of label claim)	
	D 11 34	Description	A Clear, colorless solution.	
	Bulk Mixing after 15 min.	рН	6.7 to 7.8	
Preparation of Bulk	(Bottom)	Assay	97.00 mg to 105.00 mg (97.0% to 105.0% of label claim)	
Solution	Bulk Sample	Description	A Clear, colorless solution.	
		рН	6.7 to 7.8	
		Weight per ml	0.995 to 1.05 g/ml	
	before Filtration	Colour Index	NMT 0.200 AU	
	Assay Bioburde	Assay	97.00 mg to 105.00 mg (97.0 % to 105.0 % of label claim)	
		Bioburden	10 cfu / 100 ml	
Complied By	QA (Sign. / Date))		
Verified By Q	A (Sign. / Date)			



FORMAT No.:

PHARMA DEVILS

PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No.: 00
EFFECTIVE DATE:
PAGE No: 21 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

Siltration of Bulk Sample After Sterility Should be sterile after 14 days of incubation omplied By QA (Sign. / Date) Priffied By QA (Sign. / Date)		tion of Bulk Sol Equipment			Ва	tch No.
of Bulk Solution Should be sterile after 14 days of incubation Shoul	Stage		Process Parameter	Acceptance Criteria		
erified By QA (Sign. / Date)	Filtration of Bulk Solution	After	Sterility	Should be sterile after 14 days of incubation		
	Complied By	QA (Sign. / Da	te)			
ference:	Verified By	QA (Sign. / Date)			
	nference:					



PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No.: 00
EFFECTIVE DATE:
PAGE No: 22 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

10.5 Before Ampoule Washing:

a .	Equipment			Batch No.	
Stage	Name	Process Parameter	Acceptance Criteria		
Ampoules washing	Turn Table	Bio-burden	For Informative		

T 6				
Inf	ρr	Δn	CO	٠
	u	\mathbf{u}	··	

10.6 Ampoules Washing and Sterilization:

Stage	Equipment Name	Process Parameter		Acceptance Criteria	Batch No.
	Ampoules washing machine	Visual	Initial	Should be visually clean	
		Inspecti	Middle	Should be visually clean	
		on	End	Should be visually clean	
Ammanlag		Ampoule	Visible particles: Should be free from visible particles.	• Visible particles: Should be free from visible particles	
washing		machine LBPC	Initial	 For sub visible particles: (ii)Equal to or greater than 10μm - NMT 6000/container 	
			LBPC		(ii) Equal to or greater than 25μm - NMT 600/container
				• Visible particles: Should be free from visible particles	
			Middle	 For sub visible particles: (i) Equal to or greater than 10μm - NMT 6000/container 	



PRODUCTION DEPARTMENT

REVISION No.: 00

EFFECTIVE DATE:

PAGE No:23 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

Stage	Equipment Name	Process Parameter		Acceptance Criteria	Batch No.	
				(ii) Equal to or greater than 25μm - NMT 600/container		
				Visible particles: Should be free from visible particles		
		E	End	For sub visible particles : (i) Equal to or greater than 10µm - NMT 6000/container		
				(ii) Equal to or greater than 25μm - NMT 600/cont ainer		
Ampoule washing	Ampoule washing machine	Bio-burden		NMT 10 CFU / 100 ml		
Ampoules Sterilization	Sterilization and Depyrogenatin g tunnel	d Sterility	Initial	Should be sterile after 14 days of incubation		
			Middle	Should be sterile after 14 days of incubation		
			End	Should be sterile after 14 days of incubation		
& Depyrogena	Sterilization		Initial	NMT 0.25 EU/ml		
tion	and Depyrogenatin	BET	Middle	NMT 0.25 EU/ml		
	g tunnel		End	NMT 0.25 EU/ml		
Verified By (A (Sign. / Date))				
Inference:					- 1	- 1



PRODUCTION DEPARTMENT

P	PROTOCOL No.:
R	REVISION No.: 00
E	EFFECTIVE DATE:
P	PAGE No: 24 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

10.7 Ampoules Filling & Sealing:

a.	Equipment				Batch No.		
Stage	Name	Process Par	ameter	Acceptance Criteria			
	Nitrogen gas		Initial	Should be sterile			
	from user	Sterility	Middle	Should be sterile			
	point		End	Should be sterile			
			Initial	A clear, colorless solution free from foreign			
		Description	Middle	particulate matter filled in 5 ml clear glass			
			End	ampoules.			
		E-44-1-1-	Initial				
		Extractable Volume	Middle	NLT 5 ml			
	Filling and Sealing Machine	voiume	End				
		Acidity or Alkalinity	Initial	6.7 to 7.8			
			Middle				
*****			End				
Filling and		Particulate Cont	amination				
Sealing		Visible Particles	Initial	Should be free from any visible particulate matter			
			Middle				
		1 at ticies	End				
		Sub-Visible Particles	Initial	(i) ≥ 10 micron - NMT 6000 / container (ii) ≥ 25 micron - NMT 600 / container			
			Middle				
			End				
		Assay	Initial	Each ml contains:			
			Middle	Tranexamic Acid BP 100 mg			
			End	97.00 mg to 105.00 mg (97.0% to 105.0% of label claim)			
		Bacterial	Initial				
		Endotoxins	Middle	Less than 35 IU per ml.			



PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No.: 00
EFFECTIVE DATE:
PAGE No: 25 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

End Initial Middle End	Equipment	Process	. Parameter	Acceptance Criteria		Batch No.		
Test for Sterility Middle End Should comply test of sterility.	Name	Process Parameter		Acceptance Criteria				
Test for Sterility Middle End Should comply test of sterility. End Should comply test of sterility.			End					
Sterility Should comply test of sterility. End mplied By QA (Sign. / Date) rified By QA (Sign. / Date)		TD 4.6	Initial					
mplied By QA (Sign. / Date) rified By QA (Sign. / Date)			Middle	Should comply test of sterility.				
rified By QA (Sign. / Date)		Stermty	End					
	Complied By QA (Sign. / Date)							
Perence:	Verified By QA (Sign. / Date)							



PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No.: 00
EFFECTIVE DATE:
PAGE No: 26 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

10.8 Finished Product:

Stage Equipment		D D		Batch No.
Stage	Name	Process Parameter	Acceptance Criteria	
		Description	A clear colorless solution free from foreign	
		Description	particulate matter filled in 5 ml clear glass	
			ampoules.	
		Identification		
			The Infrared absorption spectrum of the	
		By IR	crystals should be concordant with the	
			reference spectrum of tranexamic acid.	
		Extractable Volume	NLT 5 ml	
Finished		Acidity or Alkalinity	6.5 to 8.0	
Sample		Related Substance		
		Impurity A	NMT 1.00%	
		Impurity B	NMT 0.50%	
		Impurity C	NMT 0.10%	
		Impurity D	NMT 0.10%	
		Any Other Secondary Impurity	NMT 0.10%	
		Total Impurity	NMT 2.00%	
		Bacterial Endotoxins	Less than 35 IU per ml.	



PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No.: 00
EFFECTIVE DATE:

PAGE No:27 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

	Equipment	_		Batch No.
Stage Name		Process Parameter	Acceptance Criteria	
		Test for Sterility	Should comply test of sterility.	
		Particulate Contamination		
		Visible particles:	Should be free from any visible particulate matter	
		Sub visible particles:	(i) ≥ 10 micron - NMT 6000 / container (ii) ≥ 25 micron - NMT 600 / container	
	Assay: Each ml contains: Tranexamic Acid BP 100 mg		95.00 mg to 105.00 mg (95.0 % to 105.0 % of label claim)	
Complied	By QA (Sign	. / Date)		
Verified B	By QA (Sign.	/ Date)		
Inference:				
				Reviewed By Quality Assurance (Sign & Date)



PRODUCTION DEPARTMENT

PROTOCOL No.:
REVISION No.: 00
EFFECTIVE DATE:
PAGE No: 28 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

11.0 LABELLING AND PACKING RESULTS & OBSERVATIONS:

Parameters	Batch No.:			Batch No.:			Batch No.:		
	Initial	Middle	End	Initial	Middle	End	Initial	Middle	End
Overprinting details on label of each									
Ampoules (Complies/Does Not Complies)									
5 Labelled Ampoules 5 ml in (5 X 5 ml) each									
Tray pack (Complies/Does Not Complies)									
Overprinting details on Carton.									
(Complies/Does Not Complies)									
Placement of 5 Ampoules tray Pack in each									
carton Pack (1X5X5 ml) (Complies/Does Not									
Complies)									
Placement of 10 carton pack in each Shrink									
pack (1X10X5X5 ml in Shrink pack)									
(Complies/Does Not Complies)									
Placement of 8 Shrink pack in each C. Box									
(1X8X10X5X5 ml in 7 ply C. Box)									
(Complies/Does Not Complies)									
Overprinting details on 7 ply C. Box									·
(Complies/Does Not Complies)									
Complied By QA									
(Sign./Date)									

Inference:	
	Reviewed By
	Quality Assurance (Sign & Date)
	(Sign & Date)



PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00 **EFFECTIVE DATE:**

PAGE No: 29 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

2.0 ATTACHMENTS:		
•••••		
B. No.	A. R. No.	Date of COA
		Reviewed ByQuality Assurance (Sign & Date)



PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00

EFFECTIVE DATE: PAGE No: 30 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

13.0	DEVIATION (IF ANY):
14.0	SUMMARY & CONCLUSION:
15.0	RECOMMENDATION:



PRODUCTION DEPARTMENT

PROTOCOL No.:

REVISION No.: 00

EFFECTIVE DATE: PAGE No: 31 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

16.0 ABBREVIATIONS:

QA : Quality Assurance

PVP : Process validation Protocol

PVR : Process validation Report

IPQA: In-process Quality Assurance

SOP : Standard Operating Procedure

STP : Standard Testing Procedure

BMR: Batch Manufacturing Record

BPR: Batch Packing Record

BPT : Bubble point test

mg : Milligram

BET : Bacterial Endotoxin Test

ml : Milliliter

kg : Kilogram

cm : Centimeter

WFI: Water for Injection

HVAC: Heating Ventilation and Air Conditioning

IH : In-House

17.0 REVISION HISTORY:

Revision No.	Change Control No.	Detail of Changes	Reason for Change	Effective Date	Updated By
00		NA	New Report		



PRODUCTION DEPARTMENT

PROTOCOL No.: 00

EFFECTIVE DATE:

PAGE No: 32 of 32

PROCESS VALIDATION REPORT FOR TRANEXAMIC ACID INJECTION BP 100 mg/ml (500 mg in 5 ml)

18.0 REPORT POST APPROVAL:

COMPILED BY:

DESIGNATION	NAME	SIGNATURE	DATE
OFFICER/EXECUTIVE (QUALITY ASSURANCE)			

REVIEWED BY:

DESIGNATION	NAME	SIGNATURE	DATE
EXECUTIVE/MANAGER (QUALITY ASSURANCE)			
HEAD (QUALITY CONTROL)			
HEAD (MICROBIOLOGY)			
HEAD (PRODUCTION)			
HEAD (ENGINEERING)			

APPROVED BY:

DESIGNATION	NAME	SIGNATURE	DATE
HEAD (QUALITY ASSURANCE)			