PROCESS VALIDATION REPORT

FOR

DUTASTERIDE PELLETS (0.5%) FILM COATED

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1.0 SUMMARY PLAN OF STUDY:

1.1 PRODUCT AND BATCH DETAILS:

Process Validation of **Dutasteride Pellets (0.5%) Film Coated** was carried out on three consecutive batches. The details are as under.

Specified	1st Process Validation Batch	2nd Process Validation Batch	3rd Process Validation Batch
Product Name	**Dutasteride Pellets (0.5%) Film Coated**		
Product Code			
Manufacturing License No.			
Description	White to off white round spherical film coated pellets.		
Label Claim	**Each 100 mg pellets contains:** Dutasteride 0.5 mg		
Shelf Life	24 Months		
Batch Size	5.0 kg		
Storage Condition	Store in a dry place, below 30ºC		
API Manufacturer Name: Dutasteride	Pure Chem India		
Batch Number			
Mfg. Date			
Exp. Date			
Date of Commencement			
Date of Completion			

2.0 REFERENCE DOCUMENTS

S.No.	DOCUMENT NAME	DOCUMENT No.
1	Master Formula Record	
2	Batch Manufacturing Record	
3	Finished Product Specification	

3.0 MANUFACTURING EQUIPMENT AND ACCESSORIES USED IN THE PROCESS:

3.1 The various equipment's used for the Process Validation of **Dutasteride Pellets (0.5%) Film Coated** are as follows:

S.No.	EQUIPMENT	EQUIPMENT NUMBER
1	Sifter	
2	Coating pan (18 inch)	
3	Solution Preparation Vessel	

All critical equipment's were verified for their Installation, Operational and Performance Qualification. Further all the equipment was cleaned and operated as per relevant SOP's as indicated in the Process Validation Protocol.

3.2 The vessels and accessories used in the Process Validation of **Dutasteride Pellets (0.5%) Film Coated,** Batch wise details are as follows:

Batch No			
Name of Equipment's	**Equipment No**	**Equipment No**	**Equipment No**
Sifter			
Coating pan (18 inch)			
Solution Preparation Vessel			

The equipment's and accessories were cleaned as per the relevant SOP before use for manufacturing.

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4.0 ANALYTICAL REPORT NUMBERS AND QUANTITY OF ALL RAW MATERIALS

RAW MATERIAL	UOM	STD. QTY./ 5.0 kg	BATCH No.					
			QTY USED	A.R NUMBER	QTY USED	A.R NUMBER	QTY USED	A.R NUMBER
*Dutasteride	kg	0.030						
Sugar Sphere (#18/24)	kg	4.825						
HPMC E-5	kg	0.100						
Polyethylene Glycol 6000	kg	0.050						
**Isopropyl Alcohol	kg	3.300						
Dichloromethane (Methylene chloride)	kg	1.350						
*Purified Water	kg	0.350						

5.0 STAGE WISE ENVIRONMENTAL CONDITIONS

S.No.	STAGE						
		Temp.(°C)	RH (%)	Temp.(°C)	RH (%)	Temp.(°C)	RH (%)
1	Manufacturing stage						
Limit: Temperature 25+2 °C,25-5°C, RH 50±5%							
Note: Observation puts from executed BMR's.							

6.0 EXPERIMENTAL PLAN, RESULTS AND DISCUSSION:

The following critical parameters were monitored in this study:

PROCESS PARAMETERS:

- Analysis of coating stage (Drug layering) pellets for Description & Assay.
- Analysis of Chemical Tests of finished product.

ENVIRONMENTAL CONDITIONS:

- HVAC system as well as LAF units was conforming for Installation, Operational and Performance Qualification. Differential Pressure as well as Viable counts in HVAC system and LAF units were monitored on regular basis as per relevant protocols and the same were found to be conforming to specifications.
- Purified water plant, holding tanks and distribution loops were qualified as per the protocol and the same were found to be conforming to specifications.

6.1 PROCESS PARAMETERS:

6.1.1 PREPARATION OF COATING SOLUTION:

Stirring of solution	30 minutes
Filter	Through 100#
Note: observation puts from Executed BMR's. During preparation of coating solution the activities cheeked By the production Executives.	

6.1.2 IN-PROCESS CHECKS AT COATING STAGE:

6.1.2.1 In process checks of 1st batch:

BATCH No.					
STAGE			**Coating**		
Date	**Time**	**Inlet Temperature** (50 to 60 ° C)	**Pan RPM** (40 to 48 RPM)	**Peristaltic Pump RPM** (1-2 RPM)	**Atomizing Air Pressure** 1.0-2.0 kg/cm^2

6.1.2.2 In process checks of 2nd batch:

BATCH No.					
STAGE			Coating		
Date	**Time**	**Inlet Temperature** (50 to 60° C)	**Pan RPM** (40 to 48 RPM)	**Peristaltic Pump RPM** (1-2 RPM)	**Atomizing Air Pressure** 1.0-2.0 kg/cm^2

6.1.2.3 In process checks of 3rd batch

BATCH No.					
STAGE			Coating		
Date	**Time**	**Inlet Temperature** (50 to 60°C)	**Pan RPM** (40 to 48 RPM)	**Peristaltic Pump RPM** (1-2 RPM)	**Atomizing Air Pressure** 1.0-2.0 kg/cm^2

6.1.3 RESULTS OF COATING STAGE SAMPLES:

Collect the samples from the pan as per defined in protocol and send to the QC department for the further analysis.

1st Batch Number		
Sampling Locations ↓	**Description**	**Assay%**
D1S1	White spherical pellets.	
D1S2	White spherical pellets.	
D1S3	White spherical pellets.	
Mean		
RSD NMT (2.0%)		
2nd Batch Number		
Sampling Locations ↓	**Description**	**Assay%**
D1S1	White spherical pellets.	
D1S2	White spherical pellets.	
D1S3	White spherical pellets.	
Mean		
RSD NMT (2.0%)		
3rd Batch Number		
Sampling Locations ↓	**Description**	**Assay%**
D1S1	White spherical pellets.	
D1S2	White spherical pellets.	
D1S3	White spherical pellets.	
Mean		
RSD NMT (2.0%)		

7.0 RESULTS OF FINISH PRODUCT SAMPLES:

Collect the sifted #18#24 Pellets in HDPE container lined with double polyethylene bags. Withdraw composite sample from top, middle, and bottom layers of the intermediate process containers. Send the sample to QC department for analysis. After sampling palace silica gel bags inside HDPE container lined with double polyethylene bags.

PARAMETER	ACCEPTANCE CRITERIA	BATCH No.		
Description	White to off white spherical pellets.			
Identification (HPLC**)**	The retention time of the principal peak in the chromatogram obtained with assay preparation corresponds to that in the chromatogram obtained with the standard preparation as obtained in the assay.			
Moisture content	NMT 3.0%			
Residual solvent by GC: Isopropyl Alcohol	NMT: 5000 ppm			
Dissolution	NLT 75% in 60 minutes			
Assay	90.0% to 110.0%			
Particle size	NLT 90% passing through 18 mesh.			
	NLT 90% retained on 24 mesh.			
MICROBIAL LIMITS				
1. Total aerobic microbial count	NMT 1000 cfu/g.			
2. Total combined yeasts/ mold count	NMT 100 cfu/g.			
Escherichia coli	Should be Absent/g.			
Salmonella	Should be Absent/10g.			

8.0 STAGE WISE YIELD VARIFICATION:

S.No.	STAGE	OBSERVED YIELD (IN%)		
1	Packing			

9.0 CONCLUSION:

The formalized, final 3-batch validation sequence provides the necessary process validation document required to show product reproducibility and a manufacturing process in a state of control. The test data and results show process reproducibility and consistency among validated batches of **Dutasteride Pellets (0.5%) Film Coated**. Description, Moisture content, Assay, Dissolution, Particle size and Assay have been addressed both during in-process and final product testing as per defined in protocol. All the critical process parameters and critical quality attributes fall well within in-house acceptance criteria for Dutasteride Pellets (0.5%) Film Coated.

Testing has been sufficient to establish process reproducibility and demonstrate, with a high degree of certainty that the product, Dutasteride Pellets (0.5%) Film Coated is validate and process is under control.

10.0 RECOMMENDATIONS:

On the basis of in-process checks and analysis reports of Quality control department, we found that all the parameters found well within limits and there is no deviation observed during process validation, hence there are no additional recommendations required for the manufacturing of Dutasteride Pellets (0.5%) Film Coated.

11.0 REPORT APPROVAL:

PREPARED BY

S.No.	NAME	DESIGNATION	SIGNATURE	DATE
1.				

REVIEWED BY

S.No.	NAME	DESIGNATION	SIGNATURE	DATE
2				
3				
4				

APPROVED BY

S.No.	NAME	DESIGNATION	SIGNATURE	DATE
5				

AUTHORISED BY

S.No.	NAME	DESIGNATION	SIGNATURE	DATE
6				