1.0 Object

1.1 To test the performance of Rossmax NC300 mesh nebulizer

2.0 Equipment List

2.1 Rossmax NC300 mesh nebulizer*2
2.2 Marple 298 Cascade Impactor
2.3 Chroma 61602 Programmable AC Source
2.4 Shimadzu AUW120D microbalance
2.5 A.P. Buck, Inc. Libra Plus LP-5 sampling pump
2.6 Humidity/Temperature Meter
2.7 2.5% NaF solution
2.8 Taiwan Biotech Co., Ltd 0.9% Saline solution
2.9 Casio Timer

3.0 Testing Items

3.1 Aerosol Particle Size Distribution Testing(By Marple 298 Cascade Impactor)
3.2 Nebulization Rate Testing
3.3 Residual Volume Testing

4.0 Testing Procedure

4.1 Aerosol Particle Size Distribution Testing(By Marple 298 Cascade Impactor)

4.1.1 Each sample should be tested with 2.5 ml 2.5% NaF solution.
4.1.2 Add 2.5% NaF solution into the nebulizer cup, measure the weight before and after the testing.
4.1.3 Connect suction and sampling pumps to the cascade impactor testing module as see in the Fig 1.
4.1.4 Put the cup into NC300 and connect the nebulizer cup outlet to cascade impactor inlet.(Fig 1.)
4.1.5 The suction and sampling pumps are turned on and allowed to stabilize at required flows.
4.1.6 Finally start the NC300.(Sampling times can be varied for different nebulizers to allow for maximum deposit on each stage without coverloading stages.
4.1.7 After sampling for the required time, NC300 is switched off, followed a few seconds later by the sampling pump and then the suction pump.
4.1.8 Dismount the cascaade impactor from the testing module
4.1.9 Dismantle the impactor and determine the amount of NaF solution on the individual stage of the impactor, the input connection and the outlet filter.

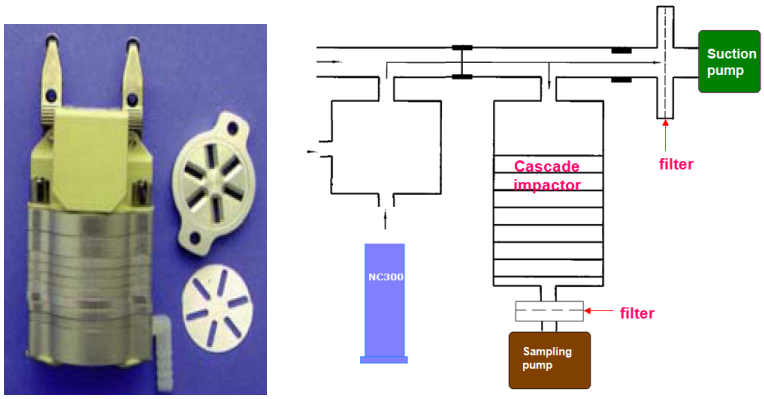

Fig 1. Cascade Impactor and Testing setup

4.2 Nebulization Rate Testing

4.2.1 Each sample should be tested with 2.0 ml 2.5% NaF solution for 1 minutes.
4.2.2 Add 2.0ml 2.5% NaF solution, measure the weight before and after the testing.
4.2.3 Put the cup into NC300 and then start NC300 for testing.
4.2.4 After 1.0 minutes have been reached, stop the NC300
4.2.5 Calculates how many weight of the solution have been nebulized

4.3 Residual Volume Testing

4.3.1 Each sample should be tested with 2.0ml 0.9% saline solution and nebulized till the cup is empty.
4.3.2 Add 2.0ml 0.9% saline solution into the nebulizer cup, measure the weight before and after the testing.
4.3.3 Put the cup into NC300,
4.3.4 Start NC300
4.3.5 Shakes the nebulizer cup one or two times during nebulizing if there has large droplet stick on the wall inside the nebulizer cup.
4.3.6 After the nebulizer cup is empty, stop NC300 and measure the mass of the tested cup
4.3.7 Calculates the Residual Volume

5.0 Testing Results

5.1 Aerosol Particle Size Distribution Testing(By Marple 298 Cascade Impactor)

Tested with 2.5% NaF solution
MMAD=3.120 μm
FPD(Fine Particle Dose)=71.46%(particle size less than 5.0 μm)

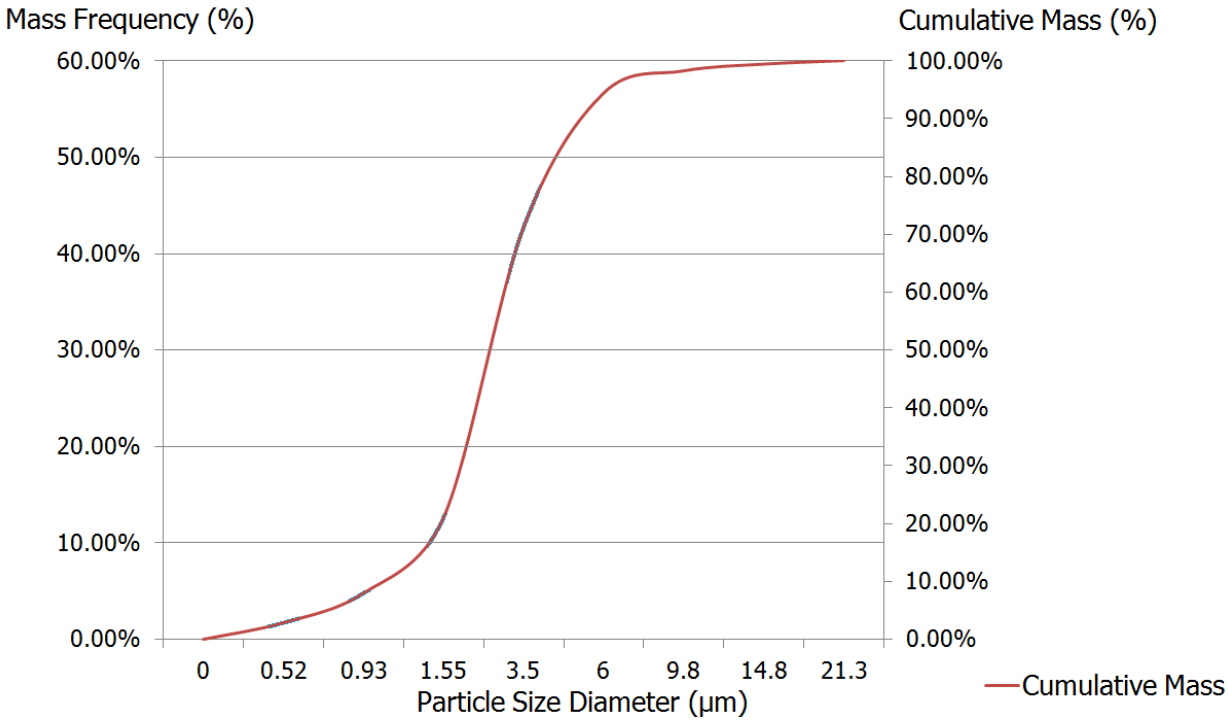

Fig 2. Aerodynamic particle size distribution

5.2 Nebulization Rate Testing

2.5% NaF solution	Sample 1	Sample 2
ml/min	0.231	0.225

5.3 Residual Volume Testing

0.9% Saline	Sample 1	Sample 2
Residual Volume (ml)	0.16	0.15