

erodynamic characteristics of aerosol delivery during invasive mechanical ventilation (IMV) are mostly determined by inserting cascade impactor in the circuit

Impactor might have some effect on airflow within IMV. Hence, the aim of the present study was to develop and evaluate new in-vitro aerodynamic characterization methodology without affecting airflow in IMV

Breathing simulator was set in standard adult IMV circuit with inspiratory and expiratory pressures of 20 and 5cm.H2O, 1:3 inspiratory-expiratory ratio breaths.min-1 and tidal volume of 500ml. Two ml of salbutamol solution containing 15 µg was nebulized using three different vibrating mesh nebulizers (VMNs) and 10000 Sidestream Jet nebulizer (JET). Sixteen metered doses, containing 100µg salbutamol each, were delivered using three different spacers. Each device was placed in inspiration limb of Y-piece of ventilator tubing. Aerodynamic characteristics of aerosol delivered were measured using cooled Andersen cascade impactor, with mixing inlet connected to it

Vibrating mesh nebulizers used had significantly more total mass in the impactor ($p<0.001$) and fine particle dose ($p<0.001$) compared to JET. Spacers used had higher total mass in the impactor% ($p<0.001$) and fine particle fraction compared to nebulizers

The in-vitro IMV methodology setting suggested here showed encouraging results in comparison of different aerosol delivery systems in intubed patient