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Open Access Letter to the Editor

Commentary on the Paper: Menon MD, Naik IV, Rajawat G, Nagarsenker MS, Krishnaprasad K, Nebulized Glycopyrronium and Formoterol, Budesonide Aerosol Aerodynamic Assessment with Vibrating Mesh and Compressor Air Nebulizer: Anderson Cascade Impactor Study, Journal of Drug Delivery and Therapeutics. 2019; 9(6):79-82 http://dx.doi.org/10.22270/jddt.v9i6.3465

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Dear Editor:

With interest we noticed the paper written by Menon et al. and recently published in the Journal of Drug Delivery and Therapeutics. The presented results are of great importance, but the conclusions do not reflect the current state of science in this field. Our latest research revealed that aerosols produced by different jet nebulizers are not equivalent in effect at all. We analyzed 13 jet nebulizers and found great differences regarding aerosol output (AO), mass median aerodynamic diameter (MMAD) and respirable dose delivery rate (RDDR)[1]. Analyzing an older generation of jet nebulizers with albuterol showed similar differences in the aerosol performance of the nebulizers[2,3].

Concerning the measurements with the Anderson cascade impactor (ACI) performed by Menon and colleagues we reinforce the use of a sinus pump breathing simulator (e.g. Compas II; PARI GmbH, Germany) in combination with the ACI analyses in order to gain quantitative and qualitative results of high validity. The mathematical combination of the aerosol output rate (AOR) determined by the sinus pump and the fine particle fraction (FPF) of the ACI indicate the amount of aerosol that is likely to be available to the patient's lung per unit of time. The FPF is typically calculated regarding particle size < 5 µm, and for aerosols administered to pediatric patients also < 3 µm. The resulting respirable drug delivery rate (RDDR) can then be seen as a quality characteristic for each nebulizer[1,3]. Such results are crucial for drawing clinical conclusions later on.

Further, the information given by the manufactures are not standardized and often lack the specification of the analytical methods used. To compare different nebulizer models examinations should be carried out with a model substance first; we used sodium fluoride (NaF) as recommended in the standard Euronorm EN 13544-1: 2007 + A1 (Aug. 2009). Such experiments should be done for vibrating mesh nebulizers as well.

Finally, we would like to comment on the references. Menon et al. mixed up citations in the document and the reference list[4,5] and did not cite our latest updated review[6]. Thus, their statement in the discussion concerning our work does not correspond to the current state of our research, i.e. Aerodynamic Particle Size Distribution (APSD) studies and basic investigations on the comparability of jet nebulizers.

References:

1. Seifert G, Krämer I, Rossi A, Kamin W. Vergleichende Untersuchung von aktuell in Deutschland vermarkteten Druckluftverneblern und den damit erzeugten Aerosolen. Krankenhauspharmazie. 2019;40(5):241-9 URL: https://www.krankenhauspharmazie.de/heftarchiv/2019/05/vergleichende-untersuchung-von-aktuell-in-deutschland-vermarkteten-druckluftverneblern-und-den-damit-erzeugten-aerosolen.html.

2. Walz-Jung H, Krämer I, Kamin W. In-vitro-Vergleich der Aerosolqualität von sieben Verneblergeräten mittels zwei Simulationsmodellen. Pneumologie. 2014;68(S 01):V579 URL: https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0034-1367749.

3. Walz-Jung H, Kamin W, Krämer I. Untersuchung der Aerosolcharakteristika ausgewählter Druckluftvernebler für

Kinder in Simulationsmodellen mit Verneblung von Salbutamol. Krankenhauspharmazie. 2018;39(9):379–89
URL: https://www.krankenhauspharmazie.de/heftarchiv/2018/09/untersuchung-der-aerosolcharakteristika-ausgewahlter-druckluftvernebler-fur-kinder-in-simulationsmodellen-mit-verneblung-von-salbutamol.html.

4. Akapo S, Gupta J, Martinez E, McCrea C, Ye L, Roach M. Compatibility and aerosol characteristics of formoterol fumarate mixed with other nebulizing solutions. Ann Pharmacother. 2008;42(10):1416-24
URL: https://www.ncbi.nlm.nih.gov/pubmed/18780805.

5. Kamin W, Schwabe A, Kramer I. Inhalation solutions: which one are allowed to be mixed? Physico-chemical compatibility of drug solutions in nebulizers. J Cyst Fibros. 2006;5(4):205-13
URL: https://www.ncbi.nlm.nih.gov/pubmed/16678502.

6. Kamin W, Erdnuss F, Kramer I. Inhalation solutions--which ones may be mixed? Physico-chemical compatibility of drug solutions in nebulizers--update 2013. J Cyst Fibros. 2014;13(3):243-50
URL: https://www.ncbi.nlm.nih.gov/pubmed/24172851.