Electrostatics of pharmaceutical aerosols

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***Abstract*—Electrostatics of pharmaceutical aerosols for inhalation is a relatively new research area. Particle charges have been proposed to potentially influence deposition in the lungs but no conclusive in vivo data have been reported. Investigation of the relationship between the formulation and aerosol charging is required to further explore this area. The modified electrical low pressure impactor (ELPI) and bipolar charge analyser (BOLAR) have been used to measure the size and electrostatic charge of particles generated from commonly used pharmaceutical devices, such as metered dose inhalers (MDIs), dry powder inhalers (DPIs), and nebulisers. The aerosol charges were found to be formulation-dependent, with the MDIs and DPIs generating charges that might be high enough to potentially affect lung deposition. On the other hand, nebulised droplets carried low charges. The knowledge gained may be useful in the development of pharmaceutical aerosols and pulmonary drug delivery in the future.**