

INVESTIGATION OF PARTICLE DISPERSIVITY ON SPRAYING DISINFECTIVE AND OTHER SOLUTIONS WITH THE ELECTROAEROSOL SPRAYER UEP-1

Justinas Antanas Dobilas,
Lietuvos veterinarijos institutas,
Instituto g. 2, LT-4230, Kaišiadorys, tel. 5 29 76

Summary. For desinfection of rooms aerosol sprayers of various types (hydraulic, thermochemical, pneumatic, etc.) spraying either polydispersed aerosols or electroaerosols are used. Their general shortcoming – an unregulated dispersivity of sprayed aerosol particles. To eliminate the above mentioned shortcoming we constructed a high pressure (3,0–3,5 atm) pneumatic electroaerosol (particles are charged with positive or negative electric charges) sprayer UEP-1 (author's invention certificate N.528096) containing a truncated cone-shaped electrode between the air and the solution tips. This enables to regulate the ratio of the sprayed air and the solution and concomitantly, the size of the electroaerosol particles sprayed.

By means of a device for determination of the content and dispersivity of aerosol particles (author's invention certificate N.1368330) we determined that in the centre of these electroaerosol particle spray of the disinfective substance the content of particles at distances 0,35–0,85 m and 2,5–5,0 m from the sprayer is the following: 9–150 mm – 37,06–53,31 % and 26,59–19,82 %; 3–5 mm – 5,22–7,11 % and 22,86–29,90 %; 1,5–3,0 mm – 3,41–2,81 % and 15,35–25,07 %. Whereas in the periphery of the spray the content of aerosol particles 9–150 mm is 35,65–25,99 % (at a distance of 0,35–0,95 m from the sprayer) and 21,35–18,82 % (2,5–5,0 m from the sprayer), 3–5 mm – 11,32–20,65 % and 31,71–30,18 %, 1,5–3,0 mm – 5,06–16,42 % and 24,76–28,06 %.

Increasing the content of air and reducing the content of solution in the tips the electroaerosol sprayer UEP-1 sprays by 10–20 % more fine (1,5–8,0 mm) particles of aerosol. Thus it is by 2,5–3,0 times more efficient (680–780 ml per minute) than the previously used electroaerosol sprayer (author's invention certificate N.193690).

The electroaerosol particles of disinfective substances charged with positive or negative electric charges tend to precipitate on various surfaces better than uncharged aerosol ones.

Keywords: electroaerosol sprayer, electroaerosols, disinfective substances, dispersivity of electroaerosol particles.