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**Bacteria inactivation effect of ions generated by dc corona discharge** DANIL DOBRYNIN, ANDREY STARIKOVSKIY, ALEXANDER FRIEDMAN, ALEXANDER FRIDMAN, DREXEL UNIVERSITY TEAM — Non-thermal plasma generated at atmospheric pressure produces a complex bio-effect caused by reactive molecules, charges, electric fields, and ultraviolet radiation. Here we present the results of experimental study of the effect of DC corona discharge produced ions on inactivation of bacteria on the surface of agar. Both positive and negative corona discharges in various gases at varied humidity were studied. The measurements in  $N_2$ - $O_2$ - $H_2O$  mixtures show that there is no inactivation in pure  $N_2$ , pure  $O_2$ , and  $N_2$ - $H_2O$ . Contrary, in the mixtures containing  $O_2$  and  $H_2O$  simultaneously (humid air,  $O_2$ - $H_2O$  mixture) the same inactivation efficiency was achieved. These results show that neither UV radiation, ozone,  $H_2O_2$ , nor other neutral active species alone produced by corona in dry oxygen, dry nitrogen or nitrogen-water mixtures have an effect on bacteria viability. Also, it is shown that charged particles alone do not provide visible bacteria inactivation. From the other hand estimations show that in  $O_2$ - $H_2O$  mixtures it is required  $\sim 1000$  ions/bacteria for 5-log inactivation.

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