Reviewer's report

Title: Influence of Negative Air Ions on Plastic Medical Equipment

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Reviewer: Maria N. Kondrashova

Reviewer’s report:

The study under consideration is of a great significance for control the hospital infection.

It is of particular interest that in this work the attention to biocidal action of air ions has been renewed.

The similar investigations were carried out in the initial period of this approach development (1955 -1979). There was a gap in literature on this subject. New data are appearing in recent publications since 2000. Probably, gap was caused by the transition to antibiotics defense. It is remarkable that the authors investigated MULTIPLE- ANTIBIOTIC RESISTANT Acinetobacter spp.

It can be suggested that after the period of anibiotics protection the appearance of resistant species forced to look for alternative methods of infection control. This facilitated the restoration of the interest to biocidal action of ions. The opinion of the authors on this subject would be interesting for readers.

The results of the careful investigation show clearly that most of common plastic items of medical equipment rapidly developed a large negative charge in the presence of working negative air ionizer. This causes Acinetobacter-bearing particles in the air to be strongly repelled from these parts and diminish their contamination. It was interesting that only two items made of different plastic, styrene acrylonitrile, showed different electrical behavior.

It is obvious that medical community is interested in possible practical applications of the presented results. However the authors limited the importance of the work only by explanation of the mechanism of bactericidial effect of air ions reported by Kerr et al.

It would be valuable if the authors could indicate at least preliminary recommendation on practical application of their results for control of hospital infection.

In this respect one point of their method should be ascertained. Negative charge is kept on the items only when ionizer is ON. This implies that for protection from bacteria ionizer should be in ON state during medical procedures with patient. However, only on the top of the last page of manuscript the authors mentioned that their ionizer produces corona discharge. It is known since the classic investigations of A. Tchijevsky up to the modern ionizers that corona discharge should be excluded from ionizers for biomedical investigations carried out in the
The presence of patient. However it can be used in the absence of people to clean air in the room. In connection with this the authors should include in Method part the more detailed information on ionizer used. Not only its trade name but data on the electrical parameters to generate ions (V, type of discharge, continuous or pulse current) should be given. There are many publications on this subject. I give only available papers by our group published in IEEE Transactions on Plasma Science: T.Sirota et al. The effect of air ions, generated by technical ionizers and a Bioionizer on rat trachea mucosa and the phagocytic activity of blood cells. 34, 1351-1358,2006; V.Tikhonov et al. Complex therapeutical effect of ionized air: stimulation of the immune system and decrease in excessive serotonin. 32, 1661-1667, 2004; M.Kondrashova et al. The primary physico-chemical mechanism for the beneficial biological/medical effect of negative air ions. 32, 230-237,2000.

The last but not least. It would be better to edit the title of the manuscript in such a way this will present infectious importance of the work. For instance:

Influence of Negative Air Ions on bacterial contamination of plastic medical equipment.

In this form the title is more appropriate for BMC Infectious Diseases and for its readers.

My additional minor comments are as follows.

1. It is better to mention that table was earthened at the first mentioning, in Fig. 1 (instead of Fig. 2) and more clearly, not only in captions but in the schemes.

2. It is better to inform that items showing positive charge are made from different plastic at the first mentioning in short results, p.1. Without such explanation this statement seems to be mysterious in spite of it is explained further.

3. In description of the results (p.3) it is better to give in brackets not all figures considered 3-8, but step by step in the course of their description.

4. There are some misprints:

p3 Results - Unometer TM - 2 , p 4 - 2, and in caption to Fig 7.

Nebuli-z-ers and nebuli-s-ers p. 6

Conclusion.

The considered manuscript corresponds to the 1-9 points crucial for acceptance by BMC Infection Diseases. The title may be improved according to my advise. Possible practical application of the results may be added and mentioned in Abstract.

Using our comments will improve manuscript but it may be published in its initial form.

**Declaration of competing interests:**
I declare that I have no competing interests.