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Short Communication

MICROBIAL AIR POLLUTION IN COLONY ROOMS OF LABORATORY ANIMALS

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SUMMARY

Environmental conditions of the colony rooms of an animal house like temperature, humidity, light, water and air must be optimum. Microbial pollution may affect the health of both laboratory animals and attendants of the animal house. During March to May 2007, the colony rooms of rabbit, guinea pigs, mice and rat were examined by settle plate method to evaluate the effect of disinfectant in reduction of air pollution. The application of disinfectant containing benzalbonium chloride, isopropyl alcohol and neem extract resulted into 58% reduction in air pollution present in colony rooms of mice and rats of animal house.

Key words: Air pollution, laboratory animals, microorganisms

Laboratory animals play a vital role in the development of biomedical research. Their management is important to keep them healthy and disease free. Environmental conditions of colony rooms of an animal house like temperature, humidity, light, water and air must be optimum. Microbial air pollution may affect the health of both laboratory animals and attendants of the animal house. Microorganisms present in the air and atmospheric dust can be demonstrated by bacteriological examination which helps in evaluating the level of microbial air pollution. Microbial air pollution in colony rooms of laboratory animals and the effect of air disinfectant containing benzalkonium chloride, isopropyl alcohol and neem extract, was evaluated in the present study.

During March to May 2007, colony rooms of rabbit, guinea pig, mice and rat were selected to examine the microbial air pollution in Disease Free Small Animal House, CCS Haryana Agricultural University, Hisar. Microbial load in the air was assessed by settle plate method as per the method described by Cruickshank *et al.* (1975). Five trypticase soya agar medium plates of 88 mm diameter were kept open one each at the corners and the centre of the colony rooms to expose for a period of 30 minutes. The plates were then incubated for 24 h at 37 ^{0} C. After incubation, the bacterial colonies in each plate were counted and the mean colony forming units/min was calculated for each colony room. The entire procedure was repeated on three consecutive days and the average value was determined. Results were expressed as the number of bacteria carrying particles per minute (bcp/min). The colony rooms of mice and rat were selected to examine the effect of the air disinfectant on microbial flora present in the air. The air disinfectant containing benzalkonium chloride, isopropyl alcohol and neem extract was sprayed inside the colony rooms and the microbiological examination of the air was again conducted after one hour application of disinfectant by settle plate method.

The microbial loads in the air of colony rooms of rabbit, guinea pig, mice and rat were 4.6, 7.7, 5.2 and 4.7 bcp/min. The optimal duration of exposure is that which gives a significant and easily countable number of isolated colonies and depends on the dustiness of air. In occupied rooms and hospital wards, it ranges generally between 10 and 60 bcp/min (Russell *et al.*, 1984). Under conditions of normal occupation,

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the air in hospital wards, offices, schools and private houses commonly shows levels of contamination in the range of 5 to 100 bcp per cubic ft, and in the range of 0.05 to 5 bcp per 88 mm settle plate per min. The higher levels are observed on much bodily movement or other disturbances such as bed making that is liable to raise dust into the air (Cruickshank *et al.*, 1975, Senior, 1989). In the present investigation the values were within the range except guinea pig and mice colony rooms. The higher microbial load in the air of colony rooms of guinea pigs than mice may be due to the open pans used for guinea pigs and frequent movements of guinea pigs in the pan may cause dusty atmosphere. The microbial load after one hour application of air disinfectant reduced to 2.16 (58.16%) and 1.96 (58.6 %) in the mice and rat colony rooms respectively. The majority of the bacteria found in the air are harmless saprophytes or commensals. Usually 0.01 to 0.1 per cent of the air-borne bacteria are pathogens (Cruickshank *et al.*, 1975). The higher levels of air contamination with pathogenic organisms are most dangerous. Therefore, it should be emphasized that having either uncontaminated air or a low level of contamination so that the health of both workers and laboratory animals can be safe guarded in the animal house.

REFERENCES

Cruickshank, R., Duguid, J.P., Marmion. B.P. and Swain, R.H.A. (1975). Medical Microbiology. Churchill Livingstone, Vol. II, Edinburgh. pp. 297-300.

Russell, M.P., Goldsmith, J.A. and Philips, I. (1984). *J. Hospital Infect.* **5**: 189-199.

Senior, B.W. (1989). Practical Medical Microbiology. Vol II, Colle, J.G., Dugaid, J.P., Fraser, A.G. and Marmion, B.P. (Edts.), Edinburgh, pp. 226-229.