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Editorial Open Access

Safety Management in Microbiological Animal Experiment

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The role played by open access articles in reaching to the masses for such pertinent issues is tremendous and will generate awareness in the areas which might be out of their scope. One of such issues is Animal experimentation which has played and will continue to play a crucial role in various biological studies all over the world. Animal experimentation has provided good opportunities to establish the pathogenesis of various micro-organisms. There are many new infectious micro-organisms surfacing through evolution by mutation and gene exchange, interspecies transfers or human exposure to new environments. With rise in novel pathogens, especially increasing proportion of zoonotic agents, the biosafety issues have become more and more important than ever before. Though last decade has seen awareness about biosafety and biosecurity spreading globally among life sciences researchers, with biosafety being practiced in most of the laboratory environments and establishment of new biosafety level 3 and 4 labs for handling high risk pathogens (HRPs), there is lot be understood and followed in animal biosafety. Animal experimentation is essential for understanding pathogenesis of newly isolated pathogens and for testing novel drugs and vaccines. The use of genetically modified organisms (GMOs) and generation of genetically modified animals raise separate issues on biosafety and biosecurity aspect. Several viral vectors, e.g. adenovirus vectors, are used to transfer genes into animals; however, the pathogenic properties and potential hazards associated with such experiments might not be well characterized. The latest research where in laboratory modified viruses have been created which may be more transmissible in mammals has indeed generated a big controversy. Research in this area needs to continue but the biosafety and biosecurity issues involved should be thoroughly examined. For the suitable risk management of such new experiments, current regulations should be reviewed and revised when necessary.

The formulation of basic guidelines with internal regulations on animal experimentation has established the fundamental concept for compliance in experiments at every facility. Under the guidelines, each experimental facility should set out unique internal regulations to manage their experiments. The internal regulations consist of four main items based on self-check and the evaluation of experiments performed at each facility: a management system under the responsibility of the director of each facility, establishment of an animal research committee, implementation of the training and education of animal experimenters, and disclosure of information about the status of animal experimentation. The animal experimentation can present unique problems. In an animal room, the activities of the animals themselves can present unique hazards not found in standard microbiological laboratories. Animals may generate aerosols, they may bite and scratch, and they may be infected with a zoonotic agent. Thus, biosafety issues associated with animal usage can be quite complex and hence, need to be dealt carefully. It is necessary for each country to implement biosafety regulations that are appropriate to its own state of affairs, but coordination and exchange of ideas at an international level will greatly enhance this process.

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