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Ethical issues on using invertebrates in environmental and biomedical practices - a case study on living fossil horseshoe crab (Article)


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Abstract

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Increasing utilization of living animals in ecological and biomedical research has drawn serious concerns in terms of animal welfare and ethical practices in animal handling. Significant attention has been given to animals of higher taxonomical hierarchy especially vertebrates such as fishes, rodents, reptiles and mammals, while ethical framework on invertebrate handling and welfare is less addressed (except for cephalopods). The definition of 'Animal' itself by any international consortia or Animal Research Act (ARA) does not include invertebrates as an animal entity. This is due to the lack of standard ethical framework to understand the pain and other physiological stress experienced by the invertebrate test animal. One such example would be the living fossil 'horseshoe crab' which is extensively bled to obtain its blue blood that is used for endotoxin quantification in biological samples. The biomedical bleeding itself leads to 15-30% post bleeding mortality of crabs, while pain and stress caused by the bleeding practice is not studied. Hence, this paper discusses the technicality of establishing standard framework for invertebrate handling. The paper also highlights the shari'ah (Islamic law) principles on scientific experimentations on animal subjects, particularly the norms related to the adoption of invertebrates in environmental and biomedical practice. Comprehensive review of ethical regulations in animal experiments, especially invertebrates, would be beneficial for revising and improving existing animal ethical practices. © 2019 Default.

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