EDITORIAL

How to map the bridges between zoology and pharmacology?

The evolution of the modern sciences had lead to divers ramifications and to the emergence of new fields from the known classical sciences (Vermeulen et al., 2013). Yet, such classical sciences and the new emerging fields are still closely related due to the interactions they have with each other’s and the features they share which make mapping the links between them an important issue to both achieve more advances and eventually redefine the existing borders. Modern research areas such as biological sciences and medicine are important multidisciplinary fields for which both zoology and pharmacology play important roles in the advancement, description and applications of the new findings within novel contexts. Herein, common features and strong links can be described between zoology and pharmacology.

Zoology, as a provider for data related to animal properties and species characteristic details, has been important for pharmacology not only for drug animal experiments (De Wasch et al., 2002) but also for cells (Jonsson et al., 2012; Braam and Mummery, 2010) and animal models (Spertzel and the Public Health Service Animal Models, 1989; Laurijssens et al., 2013) for different pathways tests and pharmacological studies. Indeed, generally the first stage of active compounds (potential future drugs) studies is mainly to evaluate the effects of the compounds on cell cultures (Ghanemi, 2014b), which are mainly derived from animals especially in primary cultures, or in vivo cell culture inside animal bodies such as rats. Furthermore, before we can move to the clinical trials, animal experiments are carried out to find out more elements about the side effects, the toxicology (Ghanemi, 2014c) and define some parameters such as pharmacokinetic values. Moreover, animal behaviour and memory studies are extremely important mainly for the study of some specific classes of drugs such as psychotropic medicines and drugs used in the treatment of neurodegenerative diseases, in addition, it allows us to understand more about the psychiatric or psychological side effects some drugs (not only the psychotropic) may have. Importantly, new finding, based on cell cultures and animal researches, have revealed important data about the G protein coupled receptors that are among the most important therapeutic targets in the modern pharmacology (Ghanemi et al., 2013; Ghanemi, 2013a, 2014d.e; Ghanemi and Boubertakh, 2014) which points the importance zoology has in the recent pharmacological advances.

On the other hand, pharmacology that mainly focus of studying the effects that active compounds can have on live animal and human cells or entities such as enzymes (Alabaster, 2002); represents an important tool for zoology and the related fields such as the animal models of diseases. For instance, the active drugs can be used in several zoological experimental processes. Some active molecules provided by either pharmacology or toxicology could be been used to develop animal models with specific characters and selected features to study diseases mechanisms or factors influence for example. In fact, for some disease we can have many factors that influence and thus, treating an animal with a drug that may eliminate the effect one factor has would allow us to study that disease without the influence of that factor and therefore, lead to a better understanding of that disease pathogenesis or pathways.

These elements are selected examples that show how zoology and pharmacology are linked and how important describing the interactions between both fields could contribute in the development of the two fields both at the experimental and at the theoretical level. Furthermore, combining data provided by the related fields such as pharmacognosy (Ghanemi and Boubertakh, 2014) especially by studying the properties of chemical (Ghanemi, 2014a,e) or natural products (Boubertakh et al., 2013; Phillipson, 2007) on cells, biochemistry (Ghanemi, 2013b) and cellular biology will surely be very beneficial to a better mapping of the bridges between zoology and pharmacology toward deeper a understanding and further advances.

Acknowledgment

Abdelaziz Ghanemi is the recipient of a 2013 CAS-TWAS President’s Postgraduate Fellowship.
References

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