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EDITORIAL

Is mapping borders between pharmacology and toxicology a necessity?



The existent common features between pharmacology and toxicology and the shared basic concepts, in addition the similarities between the principles of the two fields made them both be considered as one scientific subject by many authors. However, the descriptions of toxicology and pharmacology as two distinct areas have strong arguments as well. Therefore, the question of the existence of borders between pharmacology and toxicology and their nature represent continuous debates especially after the emergence of new advances and novel concepts in both areas such as those related to the G protein coupled receptor (Ghanemi, 2013b,c) and the factors that can influence this receptor (Ghanemi et al., 2013) along with the new descriptive approaches of drug-target interactions. Moreover, the development of traditional Chinese Medicine-based therapeutic approaches and theories (Boubertakh et al., 2013; Jiang, 2005; Yan et al., 2012; Yao et al., 2013) provides new natural products for modern pharmacology (Ghanemi and Boubertakh, 2014), all these elements have further strengthened those debates.

Pharmacology represents a science that mainly deals with therapeutic approaches using natural and synthetic compounds that are not always without any toxicological properties. In fact in some cases the toxic effect represents the basis of the therapeutic effect such as in some cytotoxic compounds used as anticancer drugs (Goodarzi et al., 2013). Furthermore, certain side effects of drugs are example of molecules with both therapeutic and toxic impacts especially within the central nervous system (Bet et al., 2013; de Kinderen et al., 2014) that represents a network within which the divers neurotransmitters and the drugs that interact with the neural transmission influence each other (Ghanemi, 2013a). On the other hand to describe a molecule as toxic or therapeutic, it may first depend on some parameters. Indeed, a compound may be therapeutic in a certain dosage but toxic in other dosages, or may be toxic for a species while it treats another species. Importantly, examples about interactions between chemical elements and live

cells (Ghanemi, 2014) will open more doors regarding the overlaps between pharmacology and toxicology.

The results we come out with are that the concepts of pharmacology or toxicology remain relative and drawing limits cannot always be reliable except if we define references according to which we want to map those borders such as dosage or species within a precise context including the patho-physiological conditions, drug interactions and the physicochemical properties of the compounds.

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