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New perspective on how to discover drugs from herbal medicines: Simulating wild animals' self-medication by human diseased-animal models to screen new therapeutics

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Humans have domesticated plants and animals since around 12,000 BCE, using selective breeding or artificial selection (as contrasted with natural selection). The process of selective breeding, in which organisms with desired traits (and thus with the desired genes) are used to breed the next generation and organisms lacking the trait are not bred, is the oldest form of genetic modification by humans. A genetically modified organism (GMO) is any organism whose genetic material has been altered using genetic engineering techniques. GMOs are used in biological and medical research, production of pharmaceutical drugs, and experimental medicine (e.g. gene therapy). The term "genetically modified organism" does not always imply, but can include, targeted insertions of genes from one species into another. Genetically modified animals currently being developed can be used to research human diseases (for example, to develop animal models for these diseases). Transgenic animals are used as experimental models to perform phenotypic and for testing in biomedical research. Genetically modified (genetically engineered) animals are becoming more vital to the discovery and development of cures and treatments for many serious diseases. Zoopharmacognosy is a behavior in which non-human animals apparently self-medicate by selecting and ingesting or topically applying plants, soils, insects, and psychoactive drugs to treat or prevent disease. Animals ingest non-foods such as clay, charcoal and even toxic plants, apparently to prevent parasitic infestation or poisoning. Self-medication in wild animals remains a controversial subject because evidence is mostly circumstantial or anecdotal, however, there are many purported examples. The methods by which animals self-medicate vary, but can be classified according to function as prophylactic (preventative, before infection or poisoning) or therapeutic (after infection, to combat the pathogen or poisoning). Although the underlying psychological and physiological mechanisms of such learned self-medicating behavior are unclear, its adaptive value is proposed to be widespread, encompassing diseased laboratory animals. The proposal of this research article is: How human diseased-animal models will keep themselves well in an artificial wild and what we can learn from them in screening new therapeutics. The current objective is to test the hypothesis that zoopharmacognosy is operational in GMOs in artificial wild health. Once a molecular target of disease is revealed, one can use this perspective for identifying active ingredient(s) from herbal medicine in new drug discovery. The generation of transgenic animals by biotechnological techniques will provide human disease models for screening drugs of clinical interest with the help of zoopharmacognosy. Some of the compounds have been identified by zoopharmacognosy kill parasitic worms, and some of these chemicals may be useful against tumors. There is no question that the templates for most drugs are in the natural world. The question is how to discover using zoopharmacognosy by GMOs.

Biography

Wael Ebied has completed his BPharm from Tanta University with Postgraduate studies from Al-Azhar University School of Pharmacy. He is a certified Senior Professional, SQA Services Inc., US leader in providing supply chain management, quality and engineering services to pharmaceuticals, medical devices and highly regulated industries. He has published more than 5 papers in reputed journals and has been serving as an Editorial Board Member of repute. He has more than twenty years' experience in pharmaceutical industries, biotechnology, medical devices and APIs. He is an accomplished technical presenter with numerous projects, scientific publications, participated in 1 patent and was awarded 7 premiums.

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