

Animal Model Services Global Market - Forecast to 2025

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Abstracts

The animal models services global market is expected to grow at single digit CAGR to reach \$962.2 million by 2025. For hundreds of years, almost every medical breakthrough in human and animal health has been the result of research using animals. Animals in research are essential for the development of new and more effective methods for diagnosis and treatment of diseases that affect both humans and animals. Animals are used to learn more about health problems, and to assure the safety of new medical treatments.

Classical pharmacological models or animal models are used as a mandatory element in preclinical (toxicological and pharmacological) studies of new drugs. Although in recent years, the replacement of animal testing and animal models with in-vitro models has been increasingly introduced into practice, according to the modern manuals of pharmaco-toxicological preclinical study, some animal studies still remain compulsory.

For approval of the first phase clinical trials it is mandatory to submit preclinical pharmacological, toxicological and pharmacokinetic findings. Toxicology testing provides information about the conditions under which potentially useful for humans drugs may become toxic. These tests are used to assess the possible adverse reactions and the nature of the target organ. Other tests for determining the dosage range which define: the maximum dose at which no adverse effects are noticed; the lowest observed adverse effect level; the maximum feasible/tolerated dose (MFD/MTD), the therapeutic index as a ratio between LD50/ED50 also use animals at the preclinical stage. These animal studies are compared and extrapolated to determine relevant data for humans based on the animal species similarity to humans. Prior to testing in humans, results from animal models allow solely the formation of the untested hypothesis of human response. For example, if a compound shows lowering blood

pressure activity in rats, the chances of such activity in humans are high. However, these approaches use of relatively large quantities of the new compound (usually around 5 g), and the required time and money. Furthermore, they also provide little or no information about the molecular mechanisms behind the observed effects.

Animal model studies have also been seen as an approach towards accidental discovery of drug effects discovered in clinical practice. For example, the diuretic effect of sulphanilamide and acetazolamide as carbonic anhydrase inhibitors; making them suitable for discovery of new biologics, as biologics are complex large compounds that are sometimes not well understood at molecular level. Animal models are biologically similar to humans and share a common physiology. They have a shorter life cycle making it convenient for study. Also, it is easy to control the animal environment, unlike that of humans. The success of animal model depends on animal model selection, which again depends on the species, breeds and strains, which have close resemblance with the humans.

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