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**Speaker's Abstract**

**The Use of Animal Models in Food & Nutrition Sciences**

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Research in humans is limited by ethical concerns and the chance of fatal anaphylactic reactions, therefore animal models have been developed to predict a response in humans. Living animals have been used in research since the ancient times (e.g. Aristotle, Erasistratus). The fundamental discoveries in biomedical sciences included experimentation on animals (e.g. *A. Lavoisier proved that respiration was a form of combustion using guinea pig; L. Pasteur demonstrated the germ theory of disease using anthrax in sheep*). Of the 107 Nobel Prizes awarded for Physiology or Medicine, 95 were directly dependent on animal research. It is estimated that between 17 and 23 million animals are used in research each year. Approximately 95% of these animals are rats and mice specifically bred for research, 4.25% of these animals include rabbits, guinea pigs, sheep, fish, frogs, insects, and other species, while only 0.75% of the animals in research are cats, dogs, and primates. There are five key features of animal models used in biomedical research: 1) in theory, the model and the target only need to have a single feature in common, but there can be any number of differences (the more fundamental the biological process, the more likely the animal model and humans will respond similarly); 2) differences are as important as similarities (they allow researchers to do things with the model which would not be possible with a human); 3) models are highly specific to a particular study and the context (e.g. pathology, physiological state, dietary needs); 4) models need to be validated; 5) models are subject to improvement through further research. Current knowledge in nutrition is based largely on the use of appropriate animal models together with defined diets.

Animal models (mostly mice, rat, guinea pig) have been extensively used in the area of nutrient deficiency diseases, nutrient-nutrient interactions, bioavailability of nutrients, setting tolerance levels (for excessive intakes of nutrients). Examples of own contribution in food and nutrition research using animal models, particularly in iron

metabolism in pregnancy, bioavailability of iron from food, interaction of hypertensive drugs with microelement (Cr) in spontaneously hypertensive rat (SHR), effects of supplementary agents (Cr(III), thiamine, plant extracts) on metabolic indices in insulin resistant and type 2 diabetic rat models will be presented.

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