## **TRANSGENIC DRUGS- AN OVERVIEW**

Sibt-ul-hassnain Abbas, Umar Farooq Gohar & Bashir Ahmad Riphah Institute of Pharmaceutical Sciences Riphah International University Lahore

## ABSTRACT

In the present review transgenic drugs, i.e plant origin and animal origin, transgenic drugs are extensively used to study in vivo gene function as well as to model human diseases. The technology for producing transgenic drugs exists for a variety of animal and plant species. Embryonic stem cell technology has been most often used to produce null mutants (gene knockouts) but may also be used to introduce subtle genetic modifications down to the level of making single nucleotide changes in endogenous genes. Methods are also available for inducing conditional gene knockouts as well as inducible control of transgene expression. Here, we review the main strategies for introducing genetic modifications into the animals and plants species. We also review a number of recent methodologies for the production of transgenic drugs including retrovirusmediated gene transfer, RNAi-mediated gene knockdown and somatic cell mutagenesis combined with nuclear transfer, methods that may be more broadly applicable to species where both pronuclear injection and ES cell technology have proven less practical. Genetic engineering of plants represents the next stage of evolution in our continuing efforts to improve plants used for the production of food and animal feed. Agricultural biotechnology is a powerful technique offering great potential for agricultural sustainability and safe production of foods with increased nutritive value, improved flavour, prolonged freshness, and even disease-fighting properties, but it is not without controversy. The potential for the transgenic crops to alleviate human hunger, and the controversies which are invariably based on visions of the new technology from widely different ethical perspective which have divided both the public and the scientific communities are discussed. But, critical to its adoption and acceptance is by providing choice and accurate information to consumers from scientists, policy makers, industry and the press. The present review addresses the prospects of the technology, and the polemics concerning its adoption.

**Keywords:** Conditional gene inactivation, Gene targeting, Inducible transgene expression, Pronuclear injection, Transgenic animal, transgene, pharmaceutical crops, risks, prospects and controversies.