Technology transfer in pharmaceutical industry

# Introduction

**What is technology transfer???**

* Transfer of technology is defined as a “logical procedure that controls the transfer of any process together with its documentation and professional expertise between developments or between manufacture sites.”
* Technology transfer is both integral and critical to the drug discovery and development process for new medical products.
* Technology transfer is helpful to develop dosage forms in various ways as it provides efficiency in process, maintains quality of product, helps to achieve standardized process which facilitates cost effective production. It is the process by which by an original innovator of technology makes it technology available to commercial partner that will exploit the technology.
* In pharmaceutical industry, “Technology transfer “refers to the processes of successful progress from drug discovery to product development, clinical trials and ultimately full scale commercialization.
* Technology transfer is important for such researcher to materialize on a larger scale for commercialization especially in the case of developing product. Technology transfer includes not only patentable aspects of production but also includes the business processes such as knowledge and skills.

# Facts of technology transfer

The transfer of technology could happen in following ways:-

* Government labs to private sector firms
* Between private sector firms of same country
* Between private sector firms of different country
* From academia to private sector firms

# Guidelines /importance of Technology transfer

* To elucidate necessary information to transfer technology from R&D to actual manufacturing by sorting out various information obtained during R&D.
* Demonstration of necessary information to technology transfer from research and development to actual manufacturing.
* To elucidate necessary information to transfer technology of existing products between various manufacturing places.
* To exemplify specific procedures and points of concern for smooth technology transfer. For the smooth manufacturing of commercialized products.

# Reason for technology transfer

* Due to lack of manufacturing capacity:- The developer of technology may only have manufacturing equipment which is suitable for small scale operation, and must collaborate with another organization to do large scale manufacturing.
* Due to lack of marketing distribution and distribution capability
* Due to lack of resources to launch product commercially
* Forming alliances with partners
* Forming alliances with partners with marketing and distribution capability.
* Exploitation in a different field of application: - Each partner may have only half of the solution i.e. the developer of the technology might be capable of exploiting the technology itself in the field of diagnostic applications and may grant exploitation right to commercial partner for the exploitation of therapeutics application.

# Steps in Technology Transfer Process

Technology Transfer is not a single way process. The development of new formulation goes through many stages. During development of a formulation, it is important to understand procedure of operations used, critical and noncritical parameters of each operation, production environment, equipment and excipient availability, which should be taken into account during the early phases of development of formulation, so that successful scale up can be carried out.

Appropriate care during technology transfer is important to enhance drug quality as developed by R&D in final formulation as well as to assure quality for predetermined period of time [9]. The processes are classified into the three categories:



**Fig.** Illustrates The Different Steps After The Drug Discovery, Different Phases Before Approval, And Different Kind Of Regulatory Approvals In The Launch Of New Medicinal Product In The Regulatory Country

* Research phase,
* Development Phase
* Production Phase.
* Research phase (Development of technology by R&D)