



Pharmaceutical Development and Technology – Future of Drug Development

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The era of development in science and technology has brought many developments in the pharmaceutical field. The future of drug development seems to be versatile for increasing longevity of life. Although little is known about these industries but we don't know it is one of the highest risk, time-consuming industry, highest budget industries in the world. Humans are using "drugs" to treat medical problems for more than 3000 years. Pharmacopoeia, the five-volume book *De Materia Medica*, registered in the first century CE by Dioscorides, a Greek botanist. William Withering in the 1780s honored for isolating the active metabolite in a herbal remedy. He discovered digitalis from the foxglove to treat patients.

With changing generations Oswald Schmiedeberg (1838–1921) is now esteemed for founder of modern pharmacology. He calculated the pharmacology of chloroform and chloral hydrate and in 1878 published the paradigmatic, *Outline of Pharmacology*. The journey in the drug development is not that easy every year we see couple of drugs licensed for use but we don't know about every year thousands of other drugs in development are wayside. The development of new drug takes 12 years and even more and budget may approximate around £1.15bn. The beginning of this development starts with a milestone from research laboratory or pharmaceutical company by understanding the process of disease at cellular or molecular levels and then identifying the treatment. The old era believed in treatments from animal, plant, fungi or marine bodies but as knowledge of scientists increased over years they now believe in molecular alteration by proteins, better understanding of genetics and gene therapy. After short listing the exact treatment modalities the check for safety and efficacy is done by various pre-clinical trials and finally the fewer one goes for

approval by Medicines and Healthcare products Regulatory Agency (MHRA) before the trials in human is done. Clinical Trial Application is put forward to scientist who will then confirm whether or not these primary trials should proceed for human trials. Approximately around 10% of these drugs still fail in stage two that is stage of clinical trials. The process of marketing and authorization is similar worldwide that needs the approval from national organization of food and drug administration. The final submit contains preclinical and clinical information obtained. The pharmacology of the drug, side effect, dosage etc. The pharmaceutical companies patent only those drugs that promise for early development. This prevents it by copying from other companies. For every 25,000 compounds that begins in the lab, 25 are investigated for humans, 5 come in to market and just one percent what was invested.

These grueling processes in the development of drug and tremendous hard work of scientists and companies funding are all very complicated before medicine comes in market. It is well said that 'it is easy to get thousand prescriptions but hard to get single remedy'. Numbers of these pharmaceutical companies are trying hard to give a single drug to be used safely by people worldwide.

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