PERSPECTIVE

Medicine in drug discovery

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ABSTRACT

A drug is a chemical substance that causes physiological or psychological changes in an organism when consumed. Medicines are often distinguished from foods and substances that provide nutrition-al support. Drug use can be by snorting, injecting, smoking drinking, absorbing through skin patches, suppositories, or dissolving under the tongue.

Key Words: *Stimulants; Depressants; Opium-related Painkillers; Hallucinogens.*

INTRODUCTION

A Pharmaceutical product, also known as a drug or a drug, is a chemical substance used to treat, cure, prevent, diagnose disease, or to promote health. Traditionally, drugs have been obtained by extraction from medicinal plants, but more recently by organic synthesis. Pharmaceutical drugs may be used for a limited time or on a regular basis for chronic conditions.

There are four types of drugs.

1. stimulants (e.g. cocaine)
2. depressants (e.g. alcohol)
3. opium-related painkillers (e.g. heroin)
4. hallucinogens (e.g. LSD)

A drug discovery program is started because there is a disease or clinical condition for which there is no suitable medical product and it is this unmet clinical need that is the fundamental driving force for the project. Initial research, often performed in academia, generates data to develop the hypothesis that inhibition or activation of a protein or pathway leads to a therapeutic effect in a disease condition. As a result of this activity, the selection of a target may require further validation before proceeding to the primary discovery phase to justify the drug discovery effort .During lead discovery; an intensive search follows to find a biologic therapy or small molecule drug, often referred to as a development candidate that will lead to pre-clinical development and, if successful, clinical development and eventually a commercially available drug. Drugs fail with inside the hospital for 2 principal reasons; the primary is they do now no longer paintings and the second one is that they're now no longer safe. As such, one of the maximum essential steps in growing a brand new drug is goal identity and validation. A goal is a wide time period which may be implemented to a number of organic entities which might also additionally encompass for instance proteins, genes and RNA.

An exact goal wishes to be efficacious, safe, meet medical and industrial wishes and, above all, be `druggable`. A `druggable` goal is on the market to the putative drug molecule, be that a small molecule or large biological and upon binding, elicit a organic reaction which can be measured each in vitro and in vivo. Natural products and their derivatives have been and continue to be rich sources for drug discovery. However, natural products are not drugs. They are created by nature and through biological tests; they are identified as clues, becoming candidates for drug development. More than 60% of drugs sold on the market are of natural origin. In the past two decades, research aimed at exploiting natural products as a resource has declined dramatically. This is partly due to the development of new technologies such as combinatorial chemistry, high-throughput measurement and screening. However, new approaches to drug discovery have not lived up to initial expectations. This has led to a renewed interest in natural products, defined by the urgent need for new drugs, especially to combat infections caused by multidrug-resistant pathogens.

Natural products and their derivatives have historically been considered invaluable as a source of therapeutic agents. However, over the past decade, natural product research in the pharmaceutical industry has declined due to problems such as the lack of compatibility of traditional natural product extraction libraries with high-throughput screening. However, as discussed in this review, recent technological advances that help address these issues, along with the unfulfilled expectations of current lead generation strategies; have led to renewed interest in natural products in drug discovery.

Drugs which are used as medicines are listed as-

1. Aspirin inhibits the production of some chemicals that play a role in blood clotting; it also inhibits the production of certain types of enzymes that cause inflammation and pain.
2. Antibiotics kill bacteria by preventing them from constructing cell walls; then bacteria can't reproduce, and die out.

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3. Caffeine stimulates the central nervous system.

4. Nicotine acts as a stimulant, speeding up the heart and raising blood pressure

Drugs have the potential to both help and harm. Caffeine is one example. Although caffeine itself isn't a medicine, it is an ingredient found in some medications. Caffeine in all forms should be used in moderation. Too much of these substances can make people feel uncomfortable and even sick. Nicotine is another substance that may fit into both categories. Nicotine itself is not harmful in the doses found in cigarettes, but it does produce addiction. This is a negative effect because addiction to nicotine causes people to use tobacco products, which can cause severe health problems with prolonged use. But nicotine is found in very small amounts in some medicines. Finally, some drugs have a harmful effect. These include alcohol and illegal drugs such as cocaine and marijuana. Some of the consequences of using too much of a substance at once are immediate (e.g., injury or death as a result of being drunk or high when driving or doing other activities that require concentration, balance and good judgment). Other risks include the development of chronic illnesses (such as heart disease and cancer) as a result of long-term use. These can differ based on the drug's qualities or how it's utilized. As a result, majority of the long-term harm caused by tobacco comes from inhaling smoke rather than the substance (nicotine). While the physical effects of a drug can be detrimental, the social situations in which they are consumed are not always harmful. In reality, they could be just the contrary, giving users with a source of camaraderie, support, and joy. Concentrating on the social contexts in which drug use happens may also be beneficial for other risk reduction techniques. Campaigns promoting safer sex among homosexual men who use crystal meth, for example, have targeted locations and gatherings where "sex on drugs" is common. Drug recovery programs may benefit from a better understanding of the potential societal advantages of drug usage. Strategies to help people re-establish social ties, friendships, and support networks could be beneficial in promoting long-term drug.

Counseling, medication, or both are used to treat drug addiction. According to research, combining medications with counseling provides the best likelihood of success for the majority of patients. Individual, family, and/or group counseling may be used. It can assist you with:

1. Recognize how you become addicted.
2. Examine how drugs influenced your actions.
3. Learn how to deal with your issues so you don't have to use drugs again.
4. Learn to stay away from locations, people, and situations that can tempt you to use drugs.

Medicines can aid with withdrawal symptoms. There are medications that can help you re-establish normal brain function and reduce your cravings if you are addicted to certain drugs. A dual diagnosis is when you have a mental illness as well as an addiction. It is important to treat both problems. This will increase your chance of success. If you have a severe addiction, you may need hospital-based or residential treatment. Residential treatment programs combine housing and treatment services. Drug use and addiction are preventable. Prevention programs involving families, schools, communities, and the media may prevent or reduce drug use and addiction. These programs include education and outreach to help people understand the risks of drug use. The entire history of modern drug uses fewer spans than three-quarters of a century. Because the history of medicine dwarfs this brief era, it is probably unsurprising that the end result is less than the consistent and rational conclusion that some would want to believe. Much of the data that best demonstrates its contradictions is only slowly and infrequently making its way into the scientific domain. The current discrepancies are such that major successes-like as comprehending the autonomic nervous system, discovering antibiotics, developing anti tuberculosis chemotherapy, and so on appear to be entirely safe.