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MATHEMATICAL MODELLING IN EFFECT OF DRUGS ON DISEASES

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ABSTRACT

In this paper we gave a effect of drugs of any disease by mathematical modelling. We will use mathematical model for this problem to solve how to be effect of any drugs to resolve Diseases. Further, we present a general mathematical structure of our models.

Keyword: Pharakinetics, Limits, Sequence, convergence of sequence.

INTRODUCTION

An experiment in the preclinical phase consists of two parts. The first part deals with the time course of the drug concentration in blood. The interest is on the distribution of the drug in the body. In this part one does not consider the disease or the effect of the drug on the disease. we seen in body what is the effect of drugs, the body does to the drug in.[1] The second part observes the development of the disease and the pharmacological effect of the drug on the disease, also called drug response. This time, one observes what the drug does to the body. Combining pharmacokinetics (PK) and pharmaco-dynamics (PD) gives an overall picture of the drug response. In PKPD it is assumed that the drug concentration is the driving force of the pharmacological effect on the disease. A PKPD experiment consists of pharmacokinetic and pharmaco-dynamic measurements Performed in a population of individuals in[6] and.[7] Typically, the PK data is sparse because blood Samples at each measurement time point have to be taken from the individuals To get a realistic overview of the effect of the drug, different doses should be administered in an experiment.

The PD data describing the disease with an administered drug is called perturbed. Also a placebo is administered to describe the disease development with no effect of the drug, called unperturbed data. We call the data from one dosing schedule a dosing group. Normally, a

dosing group consists of ten animals in our experiments. When building a PKPD model, the first step is to describe and to fit the PK of a drug. The second and difficult step is to model the disease development. Here it is necessary to understand the mechanism of the disease. We will present in paper appropriate model figures based on fundamental biological and pharmacological principles. The final step is to include the PK into the disease development model in order to describe the Pharmacological effect. It is obvious that realistic modeling is only possible in close interdisciplinary We say that a mathematical PKPD model is predictive, if it describes all available dosing groups from one experiment simultaneously by a single model parameter set.

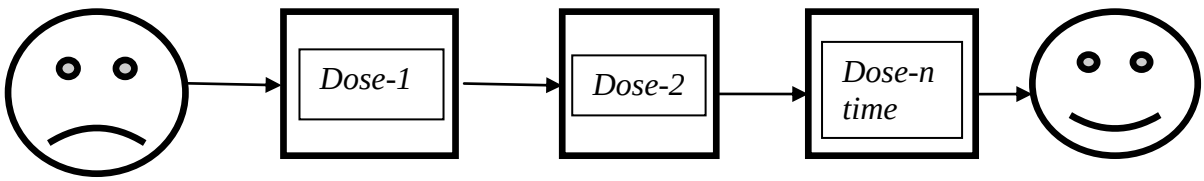
The only parameter which varies over the different dosing groups is *dose* or more precisely, the dosing schedule. With a predictive model, simulations for different dosing schedules could be performed. Also for inter-specific scaling of physiological parameters a predictive PKPD model is necessary.

RESEARCH METHODOLOGY

The following Research Methodology is adopted for the proposed Research paper:

- Identification of the problem
- Collection and study of related literature
- Mathematical formulation of the problem
- analysis and numerical solution of the mathematical model
- Interpretation of results
- Conclusion

BIOLOGICAL MODEL OF THE PROBLEM : First of all we give some drugs as regular doses .After the some time disease effected human is becomes healthy human.



DISAESE EFFECTIVE HUMAN

Fig.1

HEALTHY HUMAN AFTER TREATMENT

From Fig.1 , we show that after treatment at last the problem is resolve for effect of drugs treatments.

MATHEMATICAL FORMULATION OF THE PROBLEM

According to biological treatment the given problem is Resolved. Now we will discuss the problem by mathematically and solve it.

The physical setting for our problem is as follows. We consider problem in sequences.

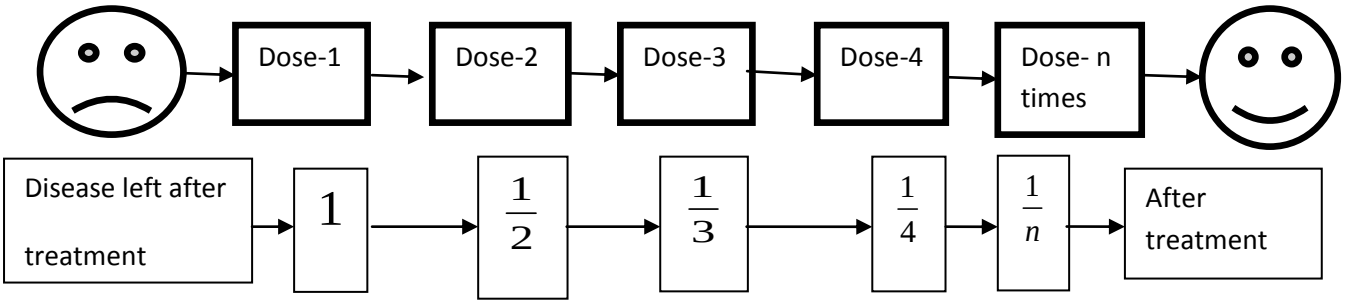


Fig.2

According to Fig.2 ,we consider the problem as in mathematical formulation (sequences problem).

Let us suppose , Sequence $s_n = \left\{1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \ldots\ldots\ldots\ldots\ldots, \frac{1}{n}\right\}$ (1)

Or

$$S_n = <\frac{1}{n}> \quad (2)$$

$$\lim_{n\to\infty} S_n = \lim_{n\to\infty} <\frac{1}{n}> \quad (3)$$

$$\lim_{n\to\infty} S_n = \lim_{n\to\infty} \frac{1}{n} = 0 \quad (4)$$

Here sequence has unique limit.

Every convergence sequence has unique limit .

Therefore given sequence problem is converge at zero .

According to mathematical modelling drugs effective and converges to diseases.

CONCLUSION

In this paper we have seen that drugs treatment if effected to resolved diseases by mathematical modelling as well as biological process**.**

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