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### Mechanistic Methods for Elucidating Toxicology and Applied Pharmacology at the Cellular, Molecular, and Physiological Levels

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**Abstract:** The use of mechanistic method in elucidating toxicology and applied pharmacology increases the level of understanding of the students. The use of the mechanistic method in molecular and cellular biology helps increase the level of understanding of the students by the modified technology. The secondary data collection method has been taken for better results and outcomes of the related topic of the study. In the study thematic analysis has been used with the help of the axial coding table to analyse the collected data. The high level of the education system, the understand ability of the topic among the students is the more important factor. Implementing the mechanistic method at the physiological level improves the level of understanding of the topic and makes the process more clear. A standard approach and process related to the study of applied pharmacology and elucidating toxicology help to improve the process of learning in India. The study is discussed about the use of the mechanistic method is very helpful for the better understanding of the students in the educational institute.

**Keywords:** Mechanistic method, Elucidating toxicology, Applied pharmacology, Cellular biology

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### Introduction

The mechanistic method is the most effective and beneficial method in the current era. As per the

view of Zhu *et al.* (2021), the use of machines in every sector makes the process very effective and

easier than the authentic method. In the education sector also, the use of the mechanical system is increasing day by day. The use of mechanical systems in elucidating toxicology and applied pharmacology increases the level of understanding of the students. As per the recommendation of Polak *et al.* (2019), the PowerPoint presentation using the projector in the classroom which includes the 3d figure of the molecular system, helps the student to understand the detailed point of toxicology.

The use of the mechanistic method for the inclusion of the toxicology and the applied pharmacology at the cellular and molecular levels has faced some problems and issues. As per the recommendation of Pannala *et al.* (2019), for the high level of study, the mechanistic method is the most beneficial method, especially for the cellular and molecular sections. The rigidity of the method is one of the problems of the method to apply the method in molecular biology. The excessive application of the mechanistic method leads to myocardial infarction and damage to cells and tissues.

The aim of the research is to evaluate the overall impact of the mechanistic method in the elucidating toxicology and applied pharmacology at the cellular level. The objectives of the study are: (i) to evaluate the role of the mechanistic method at the molecular and physiological levels, (ii) to examine the advantages and disadvantages of choosing the mechanistic method at the molecular and physiological levels, (iii) to determine the understanding capacity of the students of elucidating toxicology by using the mechanistic method, and (iv) to understand the development of the cellular, molecular, and physiological levels for including the mechanistic method

The arise questions at the time of conducting the research were: (i) What is the role of the mechanistic method at the molecular and physiological levels? (ii) What are the advantages and disadvantages of choosing the mechanistic method at the molecular and physiological levels?

(iii) What is the understanding capacity of the students of elucidating toxicology by using the mechanistic method? (iv) What is the rate of development of the cellular, molecular, and physiological levels for including the mechanistic method?

The study is significant as with the help of the study the role and impact of the mechanistic method are verified. As per the recommendation of Miller *et al.* (2020), the use of the mechanistic method in molecular and cellular biology helps increase the level of understanding of the students by the modified technology. The mechanistic method attracts students by the innovative and interesting factors of the technological system and the cell structure and the cell transformation become very easy to understand through the technique.

#### *Role of the Mechanistic method at the molecular and physiological levels:*

The benefits of the mechanistic method in the molecular and physiological educational system are undeniable in recent days. As per the recommendation of Boreiko and Rossman (2020), the use of various kinds of mechanical technologies in the molecular and physiological educational system of applied pharmacology helps the students to understand the topic more clearly and easily. The mechanistic technology in the molecular education system includes the students in the education and the demonstration of the connection between molecular interaction and the therapeutic treatment become very easy for the students. According to Xie *et al.* (2020), the demonstration process of the molecular and cell system becomes acceptable to students of applied pharmacology. Therefore, the use of the mechanistic method at the molecular and physiological levels enhances the level of understanding and education quality.

The mechanistic techniques in the nanoparticles and the toxicity education are valuable to discover the experimental approaches related to the study. As per the view of Trapotsi *et al.* (2022), the analysis of the process and the novel

substance in molecular biology is important to evaluate the effectivity of the substance in the human body. Therefore, the mechanistic methods step up the method of the monotonous technique of education of applied pharmacology in molecular education.

*Capacity of understanding the elucidating toxicology by using the mechanistic method by including the mechanistic methods:*

Including the mechanistic method in the field of toxicology and other cellular and molecular biology, the capacity of understanding of the students also increases as compared to the previous days. As per the recommendation of Azer *et al.* (2021), the use of modern technology systems in the educational sector increases the rate of attendance of the students. The students become more attracted to the elucidating toxicology by showing a different kind of structure of toxicology and molecular system by use of modern technology in the classroom. The mechanistic of action or the MoA basically means the specific kinds of biochemical interaction between the molecule and drug substances. According to Senges *et al.* (2020), in molecular biology, the practical approach is most effective than the theoretical approach. Therefore, the use of the mechanistic approach is a kind of practical approach that is more beneficial than the theoretical practice of the topic.

Toxicology and applied pharmacology are the most important and complicated parts of the molecular and cellular level of education. The proper justification of the chapter is very essential for the student for a better understanding of molecular structure and formation. As per Jiang *et al.* (2019), education in toxicology is the most vital part and this part consists of two factors that are the artificial system and the natural system. Therefore, the leader has to be more conscious about the study of the topic and the use of the mechanistic method helps the teacher to improve the education quality in the educational institute.

## **Materials and Methods**

### *Data collection method:*

The data collection method is the most important part of the research to evaluate the research more specifically and accurately. As per the recommendation of Słota *et al.* (2022), choosing the proper and effective data collection method for a study helps the researchers to collect related and reliable data according to the study. More data and information makes a study more trustworthy and reliable. There are two types of data collection methods which are the primary data collection method and the other is secondary data collection method. For the study, the secondary data collection method has been taken for better results and outcomes of the related topic of the study. The secondary data collection method is more suitable for the study than the primary data collection method. As per the recommendation of Wang *et al.* (2019), the secondary method of data collection demands less effort from the researchers as the internet, newspaper, journals, and articles are the data collection resources of the method. The secondary qualitative data have been taken in the study following the inclusion and exclusion criteria. Therefore, the vast amount of data and information makes the study more effective and reliable.

### *Data analysis:*

The process of data analysis is another important part of research to analyze the effect and the outcomes of the study. As per the recommendation of Gulcin (2020), through the data analysis process, the collected data and the information can be analyzed. There are many kinds of data analysis processes for analysing the collected data to make the study more valuable and effective. In the study thematic analysis has been used with the help of the axial coding table to analyse the collected data. Various kinds of algorithms and strategies in the analysis process help the researchers to analyse the effect of the mechanistic method in elucidating toxicology and applied pharmacology. For analysing the effect

and the impact of the mechanistic method in molecular and cellular biology, the axial coding table has also been used in the study to make a systematic review of the study. Therefore, the data analysis process makes the data and the information more acceptable and understandable.

## Results and Discussion

### *Development of the cellular and molecular levels by including the mechanistic method:*

The inclusion of the mechanistic method at the cellular, molecular, and physiological levels increases the quality of the teaching and learning process in the educational institute. As per the recommendation of Magnano *et al.* (2021), for the high level of the education system, the understanding ability of the topic among the students is the more important factor. The result of the inclusion of the mechanistic method at the physiological level is that the differentiation among the cell particle becomes very easier as the students can see the process of differentiation on the screen. Therefore, students can become able to comprehend cell movement through the use of the digital system.

### *Improvement in the understanding of the physiological levels among the students:*

The physiological level is discussed as the foundation of the building process of cells and tissues in the human body and other living organisms. The application of improvised technological items in the educational institute makes the students more knowledgeable about the process to cope up the diseases and stress in the human body. As per the view of Umamaheswari *et al.* (2021), the 3d presentation of the process of minimizing diseases helps the students to build better knowledge. Therefore, implementing the mechanistic method at the physiological level of education improves the level of understanding of the topic and makes the process more clear.

### *Pros and cons of implementing the mechanistic method in the elucidating toxicology:*

The implication of the mechanistic method in elucidating toxicology is a great and effective

innovation for the students. As per the recommendation of Zhao *et al.* (2019), the presentation, PowerPoint presentation, and smart teaching enhance the level of understanding of the students of the topic. The use of the method makes the students more active in the study as different kinds of approaches and techniques are used in the method. The disadvantage of using the method is that the method is rigid and follows a rigid structure. The lack of flexibility in the method cannot be able to properly define the role and the activity of the students.

### *Impact of the mechanistic method at the Molecular and physiological levels:*

The computational model which is used in the mechanistic method is very helpful for the students of molecular and physiological levels. As per the view of Luan *et al.* (2020), the application of various kinds of effective models in the education system makes the education system more impactful and beneficial. Using the mechanistic method at the physiological level of education, the current strategies of drug development can be determined. The ability to determine drugs can increase the production of drugs for the patients and thus, the medical institute becomes more helpful.

The above study has discussed the impact of the various models and methods of the mechanistic method in the field of applied pharmacology and elucidating toxicology. From the study, the current rate of application of the mechanistic method in the medical institution and the development of drug production in the medical sector has also been discussed. The effectiveness of the mechanistic method at the cellular, molecular, and physiological levels has been highlighted. The strategies and the proper planning must be included with the mechanistic method to make better results and outcomes. A standard approach and process related to the study of applied pharmacology and elucidating toxicology help to improve the process of learning in India.



## Conclusion

The positive and negative impacts of the mechanistic methods for elucidating toxicology and applied pharmacology have been discussed in the study. From the above study, it can be concluded that in the various stream of molecular biology and the cellular levels of biology, the use of the mechanistic method is very helpful for the better understanding of the students in the educational institute.

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