

St.James College of Pharmaceutical Sciences St.James medical Academy River Bank, Chalakudy			
Programme:	B Pharm	Sem.:	VII
Name of Course: (Subject)	Novel Drug Delivery System	Course Code:	BP 704
Teaching faculty of the course	Dr Smitha K Nair Ms Amala Fetcy K		

Summary of the Lecture Plan

Topic	Lectures	Hours
Unit I	Controlled drug delivery systems	6
	Polymers	4
Unit II	Microencapsulation	3
	Mucosal Drug Delivery system	4
	Implantable Drug Delivery Systems	3
Unit-III	Transdermal Drug Delivery Systems	3
	Gastroretentive drug delivery systems	4
	Nasopulmonary drug delivery system:	3
Unit IV	Nanotechnology and its Concepts	8
Unit-V	Ocular Drug Delivery Systems	7

Major issues or Core aspects to be addressed/ covered:

Controlled drug delivery systems
a. Introduction, terminology/definitions and rationale in CDSS
b. Advantages, disadvantages of CDSS
c. Selection of drug candidates for CDSS
d. Different approaches to design controlled release formulations based on diffusion, dissolution and ion exchange principles
Polymers
a. Introduction, classification, properties of Polymers
b. Advantages and application of polymers in formulation of controlled release drug delivery systems
Microencapsulation
a. Definition, advantages and disadvantages
b. Discussion about microspheres/microcapsules, micro particles
c. Methods of microencapsulation Techniques
d. Applications of microencapsulation
Mucosal Drug Delivery system
a. Introduction, Principles of bioadhesion / mucoadhesion
b. Advantages and disadvantages of Mucosal drug delivery

c. Concepts in transmucosal permeability
d. Formulation considerations of buccal delivery systems
Implantable Drug Delivery Systems
a. Introduction, advantages and disadvantages
b. Concept of implants and osmotic pump
Transdermal Drug Delivery Systems
a. Introduction, Permeation through skin
b. Factors affecting permeation, permeation enhancers
c. Basic components of TDDS
d. Formulation approaches
Gastro retentive drug delivery systems
a. Introduction, advantages, disadvantages
b. Approaches for GRDDS – Floating, high density systems, inflatable & gastroadhesive systems
c. Applications
Nasopulmonary drug delivery system
a. Introduction to Nasal and Pulmonary routes of drug delivery
b. Formulation of Inhalers
c. Dry powder and metered dose, nasal sprays, nebulizers
Nanotechnology and its Concepts
a. Concepts and approaches for targeted drug delivery systems
b. Advantages and disadvantages
c. introduction to liposomes, niosomes, nanoparticles
d. Monoclonal antibodies and their applications
Ocular Drug Delivery Systems
a. Introduction
b. Intra ocular barriers and methods to overcome– Preliminary study
c. Ocular formulations and ocuserts

Sample Questions

Controlled drug delivery systems
1. Define CDDS.
2. What are the advantages and disadvantages of controlled drug delivery systems?
3. Selection criteria for the drug candidates for CDDS?
4. Different approaches to design-controlled release formulations.
Polymers
1. Classification of Polymers with example.
2. What are the properties of Polymers?

3. Example for biodegradable polymers.
4. Application of polymers in formulation of controlled release drug delivery systems.
Microencapsulation
1. Define Microencapsulation.
2. Advantages and disadvantages of Microencapsulation.
3. Write a note on microspheres/microcapsules, micro particles.
4. Methods of microencapsulation Techniques.
5. Applications of microencapsulation.
Mucosal Drug Delivery system
1. Principles of bioadhesion / mucoadhesion.
2. Advantages and disadvantages of Mucosal drug delivery?
3. Concepts in transmucosal permeability.
d. Formulation considerations of buccal delivery systems .
Implantable Drug Delivery Systems
1. What are Implants?
2. What are the advantages and disadvantages of implantable drug delivery?
3. Explain about osmotic pump.
4. What are the application of Implants?
Transdermal Drug Delivery Systems
1. Explain the structure and physiology of skin with neat diagram.
2. What are types of Transdermal Drug Delivery Systems?
3. Factors affecting drug absorption in TDDS.
4. What are the QC tests for TDDS.
Gastro retentive drug delivery systems
1. What are the pros and cons of Gastro-retentive drug delivery system?
2. Explain the Physiology of stomach.
3. What are Modulation of GI transit time and its approaches to extend GI transit?
4. Explain about Gastro adhesive systems.
Nasopulmonary drug delivery system
1. Explain the formulation of inhalers.
2. What are metered dose inhalers?
3. What are nebulizers?
4. Explain the mechanism of action of nasal spray.
Nanotechnology and its Concepts
1.What are the approaches of targeted drug delivery system?
2. What are liposomes?
3. What are niosomes?

4. What are monoclonal antibodies? List out its application in pharmaceutical industry.

Ocular Drug Delivery Systems

1. What are occuserts?

2. Types of ocular drug delivery systems?

3. Explain the barriers of drug permeation through eye.

4. What are the methods to overcome the barriers of drug permeation?