

Lesson 8

Topic of the lesson: Final control work "Modern research in the field дизайна лекарственных of drug design for the treatment of various diseases"

The purpose of the lesson: To study modern approaches to the design of drugsofforeign origin for modeling their biological activity.

Questions for the lesson:

1. Stages of development and laboratory synthesis of potential drugs.
2. Primary stages of bioassay and preclinical and clinical trials.
3. Methods of analysis of organic compounds.
4. Categories чистоты of substance purity: determination температуры of boiling and meltingpoints.
5. Categories чистоты of substance purity: density, показатель refractive index; molecular refraction, specific rotation.
6. Principles of chemical modification for modeling their biological activity.
7. Features of the chemistry of aromatic compounds.
8. Creation of groups of synthetic drugs with randomdiscoveriesand analog syntheses based on the principle of chemical modification
9. Regression analysis
10. Chemical features of heterocyclic compounds
11. Formation of protoarsenal of natural medicines. Medicinal products of plant origin.
12. Formation of protoarsenal of natural medicines. Medicinal products of bacterial origin.
13. Combinatorial chemistry.
14. Entering the chemical structure in the HyperChem program
15. Geometry optimization in the HyperChem program
16. Basic concepts, modern chemical classification of alkaloids.
17. Chemical features of alkaloids: quinine.
18. Chemical features of alkaloids: papaverine
19. Chemical features of alkaloids: morphine, codeine
20. Chemical features of alkaloids: atropine, cocaine
21. Prodrugs. Empirical bases of their design. Pharmacokinetic properties of leader molecules (ARMET indicators)
22. The principle of antimetabolites in speculative drug design
23. Conformational analysis in the HyperChem program
24. Особенности Conformational search features

25. Determination of the active group in families of biologically active substances. The pharmacophore principle. Speculative and empirical design of opioid analgesics based on the leader-morphine
26. Chemical features of glycosides.
27. Recognition of drug substance by protein targets
28. Design of the active center of a protein of known structure
29. Design of the active center of a protein of unknown structure by the homology method
30. Whole Protein Model Design
31. Natural protein-forming alpha-amino acids
32. Functional proteomics.
33. Structure, functions and active centers of enzymes
34. Target protein receptors. Structure and functions
35. The problem of drug resistance. Mechanisms of drug resistance development
36. Some chemical and combined methods of combating the emerging resistance of pathogenic microorganisms to classical drugs
37. Comparative analysis of molecular fields (SAMP)
38. Genomics. Postgenomic stage in the development of new drugs. Design of a potential drug substance that interacts with the target DNA.
39. Polymer materials for creating drug agent carrier nanomatrix. Their structures and syntheses
40. Homochain (carbon-chain) polymers and copolymers for creating drug nanoforms.
41. Heterochain polymer materials
42. Nanotechnologies in device design for the protection and delivery of nanomedicines
43. Examples of successful design of therapeutic nanopreparations
44. Features of working in the PASS program