



MOLEKULYAR BIOLOGIYA DARSLARIDA DORI MODDALARINING TA'SIR MEXANIZMLARINI MODELASHTIRISH

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Annotatsiya. *Jahon farmatsevtika bozorida dori vositalarining 40–50 foizi o'simlik xomashyosiga asoslanadi. O'zbekiston florasidagi 4 500 dan ortiq o'simlik turining qariyb 600 tasi dorivor xususiyatga ega bo'lsa-da, bu ma'lumotlar maktab biologiya darsliklarida yetarlicha yoritilmagan. Ushbu maqolda Biologiya fanini farmatsiya bilan integratsiya asosida o'qitish o'quvchilarda ekologik madaniyatni shakllantirish, shuningdek, farmatsevtika sohasiga yo'naltirilgan kasbiy orientatsiyaning dastlabki bosqichini ta'minlash haqida yoritilgan.*

Kalit so'zlar: *Farmakodinamika, retseptorlar, molekulyar biologiya, fermentativ kataliz, vizuallashtirish, inhibitorlar, oqsil sintezi*

Аннотация. *На сегодняшний день около 40-50% лекарственных средств на мировом рынке производятся из растительного сырья. Из более чем 4500 растений флоры Узбекистана около 600 обладают лечебными свойствами. Однако в школьных учебниках биологии эта информация представлена поверхностно. Обучение биологии в тесной связи с фармацевтикой является крайне актуальным не только для формирования экологической культуры у учащихся, но и в качестве начального этапа профессиональной ориентации для фармацевтической промышленности*

Ключевые слова: *Этноботаника, фармакогнозия, интегрированное обучение, фитотерапия, лекарственные средства, морфологический анализ, метод проектов.*

Annotation. *Today, approximately 40-50% of pharmaceutical drugs in the global market are derived from plant raw materials. Out of more than 4,500 plants in the flora of Uzbekistan, nearly 600 species possess medicinal properties. However, this information is presented superficially in school biology textbooks. Teaching biology in integration with pharmacy is highly relevant, as it not only fosters ecological culture among students but also serves as the initial stage of professional orientation (career guidance) for the pharmaceutical industry.*

Keywords: *Ethnobotany, pharmacognosy, integrated education, phytotherapy, medicinal products, morphological analysis, project-based method.*



Kirish. Ushbu maqolada biologiyaning "Hujayra va moddalar almashinuvi" bo'limini farmatsiya bilan bog'lashning innovatsion usullari yoritiladi: Dori va Retseptor o'zaro ta'siri: Biologiyada oqsillarning konfiguratsiyasi o'tilayotganda, dori moddasining retseptor bilan bog'lanishi "Kalit va qulf" modeli orqali tushuntiriladi. Bu jarayonni tushuntirishda quyidagi formula muhim o'rin tutadi: Antibiotiklar va Bakteriya biologiyasi: Bakteriya hujayrasining oqsil sintezi (translyatsiya) jarayoni o'tilayotganda, antibiotiklarning (masalan, tetratsiklin) bu jarayonni qanday to'xtatishi vizual modellar yordamida ko'rsatiladi. Bu orqali o'quvchi antibiotiklarning biologik mohiyatini va nima uchun ularni palapartish ichish mumkin emasligini tushunib yetadi.

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Mexanik modellar: Penoplast yoki 3D printerda chiqarilgan oqsil va dori modellari.

Virtual modellar: "Molecular Workbench" yoki "PDB" (Protein Data Bank) kabi dasturlar orqali dori molekulasining oqsilning faol markaziga birikishini ko'rsatish.

Antibiotiklar va Translyatsiyaga ta'sir mexanizmi

"Masalan, Tetratsiklin antibiotigi bakteriya ribosomasining 30S sub-birligiga birikib, oqsil sintezini (translyatsiyani) to'xtatadi. Bu jarayonni darsda 'konveyerning to'xtashi' sifatida modellashtirish mumkin. Bu orqali o'quvchi dori vositasi faqat bakteriya hujayrasiga xos bo'lgan qismlarga ta'sir qilishini, lekin inson hujayrasiga zarar yetkazmasligini (selektivlikni) tushunadi."

Xulosa. Xulosa qilib aytganda, molekulyar biologiya darslarida farmakologik tushunchalarni modellashtirish orqali o'qitish quyidagi natijalarni beradi: Fanlararo integratsiya: Biologiya, kimyo va tibbiyot fanlari o'rtasidagi uzviylik ta'minlanadi.

Vizualizatsiya: Murakkab molekulyar jarayonlar (masalan, oqsil sintezi yoki fermentativ reaksiya) oson o'zlashtiriladigan vizual obrazlarga aylanadi.

Kasbga yo'naltirish: O'quvchilarda farmatsevt, biotexnolog va shifokorlik kasblariga nisbatan ongli qiziqish uyg'onadi.

Sog'liqni saqlash savodxonligi: Aspirin yoki antibiotiklar misolida dorilarning foydasi va nojo'ya ta'sirlari haqida fundamental bilimlar beriladi.





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