



1. ACTION OF BIOPHARMACEUTICAL FACTORS ON DRUG BIOAVAILABILITY

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Introduction. According to the Food and Drug Administration (FDA), bioavailability represents the amount of active substance released from a pharmaceutical form, absorbed into the bloodstream, and reaching the site of action, manifesting its therapeutic effect. Thus, bioavailability can be affected by a series of factors: biopharmaceutical and physiological factors, drug administration form, and interactions with other medicinal substances. Optimization of these factors is essential for improving drug bioavailability and preventing tragic events, such as the global impact generated by thalidomide.

Aim of study. Analysis of the main biopharmaceutical factors influencing drug bioavailability.

Methods and materials. It was evaluated 32 articles, using databases: PubMed, MEDLINE, The Thomson Corporation.

Results. It was established that the series of biopharmaceutical factors, such as chemical structure, solubility, pharmaceutical form, micronization, and isomerism, influence drug bioavailability both positively and negatively. Modification of the chemical structure: introduction some radicals (methylprednisolone (MP), obtained by attaching CH₃-group in the C6 of prednisolone, showed that MP on average 4 times as effective as hydrocortisone); salt form (sodium benzylpenicillin has a higher water solubility than benzylpenicillin). Another significant factor influencing bioavailability is isomerism (the S(+) isomer of ofloxacin has an antibacterial action approximately 10 times greater than its R(-) form). The following factors are polymorphism (metastable polymorphic form of dicaine has 2-3 times greater anesthetic activity); micronization of powders (griseofulvin, acetylsalicylic acid, ibuprofen). However, in the case of acetylsalicylic acid, micronization can lead to aggregation, reducing the active surface and consequently its bioavailability, therefore micronization is carried out in the presence of axillary substance - polysorbate 80 (wetting agent).

Conclusion. Biopharmaceutical factors can influence drug bioavailability by changing the chemical structure, increasing solubility, obtaining a new pharmaceutical form, which leads to modifications in absorption and therapeutic efficacy of drugs.