35. THE MANUFACTURING TECHNOLOGY AND THE BIOAVAILABILITY OF MEDICINAL SUBSTANCES FROM CAPSULES

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Introduction. The original purpose of taking medicinal substances in capsules was to mask the unpleasant smell and taste of drugs. Today, however, it prevails that the bioavailability of drugs in hard capsules is significantly superior to other solid forms for oral use (tablets, powders, etc.).

Aim of study. The aim of the research is to present modern methods of manufacture of operculated capsules, their advantages and the factors which determine the bioavailability of medicinal substances in the operculated capsules.

Methods and materials. Bibliographic sources were analysed using NCBI platform, PubMed DrugBunk, Pharmatech, Pharmaceutical-technology and others.

Results. Operculated capsules are hard-coated capsules, also called hard capsules, gelatinous capsules with a cap or gel. The capsules are solid pharmaceutical preparations, consisting of a hard coating, consisting of two prefabricated cylindrical parts, opened at one end and with the other rounded and closed ends. The active substance, generally in solid form (powder or granules) is introduced into one of the two parts, then the second merges with the first. High bioavailability compared to other solid preparations (tablets,¬ drops, pills) derives from the fact that gelatin walls break and dissolve rapidly, resulting in rapid release of active substances. Advantages of the capsules include: simple formulation, which allows the control of possible incompatibilities and the avoidance of them; easy and fast manufacture with superior precision of dosage in modern technologies; masking the bad taste and smell of some medicinal products. One of the technological methods of manufacture of capsules is immersion which is carried out within a specified time-frame and speed. Immersion of the pine bars in gelatin solution takes place by simultaneously immersing pin molds at a temperature of 22°C in gelatin solution at a temperature of 50-55°C, and on the surface of each pin a thin thread of gelatin is formed, so it has the shape of the capsule body. The breaking and the dissolving of gelatin, and as a result the bioavailability of medicinal substances within it, will depend on the following factors: 1. nature of gelatin (Type A or B); 2. pH of the liquid medium, which can have influence on the dissolution of both: the walls and the solid contents; 3. wetting the contents of the capsule; 4. avoiding the interaction of gelatin-medicinal substances within the capsule, which may result in a reaction which may ¬extend the time of opening of the capsule; 5. storage of capsules.

Conclusion. Operculated capsules are one of the most convenient and light pharmaceutical forms used by the patient. The capsule production technology is completely automatic, modern equipment has optical scanners that detect visual imperfections and reject those ones. The bioavailability of the operculate capsules is among the highest but depends on the active substances and excipients. Operculated capsules are widely distributed globally with high efficacy and minor side effects.