DIRECTIONS OF APPLICATION OF MICROCRYSTALLINE CELLULOSE IN DIRECT COMPRESSION OF TABLETS

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Introduction. Direct compression is the preferred process to manufacture solid dosage forms. All solid dosage forms mainly contain active pharmaceutical ingredient (API) and excipients. The excipients are used as bulking agents in formulation; they may be diluents, binders, fillers, disintegrants, glidants or lubricants. Microcrystalline cellulose can be used in desired concentration. It does not show any side effects on flow property and quality of powder blend.

Aim. The aim of this work is a study of directions of application of microcrystalline cellulose in direct compression of tablets.

Materials and methods. Content analysis of official sources of information.

Results and discussion. Microcrystalline cellulose is non-reactive, free-flowing and versatile pharmaceutical excipient. It has strong binding property to bind the active pharmaceutical ingredient, most extensively used filler and has inherent disintegrant properties. Besides these qualities, microcrystalline cellulose is having required lubrication properties in itself. It is native of cellulose group. It is purified, partially depolymerized cellulose which is an organic compound; consisting of linear chain of several hundred to ten thousand β (1-4) linked D-Glucose units. It is prepared by treating alpha cellulose, obtained as pulp from fibrous plant material, with mineral acids at required temperature and pressure.

A number of studies have confirmed that the moisture content of MCC influences compaction properties, tensile strength, and viscoelastic properties. Moisture within the pores of MCC may act as an internal lubricant, reduce frictional forces, and facilitate slippage and plastic flow within the individual microcrystals. The lubricating properties of water may also reduce tablet density variation by providing a better transmission of the compression force through the compact and by decreasing the adhesion of the tablet to the die wall. Compressibility of MCC depends on moisture content, which means that when MCC having different moisture content is compressed with the same pressure, it may not result in the same compact porosity.

Particle size has a very little effect on the tablet ability of neat MCC, i.e., not lubricated nor blended with other excipients or active pharmaceutical ingredients (APIs).

Reducing the particle size of MCC will increase cohesiveness and hence as a consequence surely affect its flow ability. That different particle sizes of excipient

may impact tablet characteristics including hardness, friability, disintegration, and content uniformity. Improved flow ability will be obtained when coarser MCCs are employed as well as reduction in tablet weight variation. That particle size may also impact wetting properties, dissolution of the API, and stability of drug products.

The improved compressibility of plastically deforming materials, such as MCC, might then result in improved tabletability as a result of the increased bonding surface area. The higher roughness of low density MCC particles may also contribute to particle interlocking. Low bulk density MCC will provide higher dilution potential and hence better counteract the poor tableting properties of APIs. Granulation or drying as preprocesses of tablet formulation will densify MCC hence less tabletable than the original porous MCC. It can therefore be generalized that a decrease in bulk density improves tabletability; however, it will often hinder flowability.

Conclusion. Microcrystalline cellulose, according to many publications, is an excipient most widely used for direct compression. Besides, it also serves as a strong dry binder, tablet disintegrant, absorbent, filler or diluent, a lubricant, and anti-adherent.

USE OF PHYTO EXTRACTS IN HAIR CARE MASKS

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Introduction. Hair mask – a means of intensive care. It contains a huge amount of nutrients, so it does not require daily use, such as many shampoos.

Aim. The aim is to study the properties of hair masks in order to correct skin diseases.

Materials and methods. Research methods are literature sources and Internet resources.

Results and discussion. Dermatitis is an inflammatory process of the facial skin that occurs from exposure to the outer coverings of physical, chemical and plant factors. However, dermatitis caused by the action of physical factors is isolated in a separate nosological unit and is usually considered in the relevant section, for example, dermatitis under the action of ultraviolet radiation, etc.

Inflammatory processes in the skin, induced by chemical agents, are divided into contact and toxic-allergic. Among the contacts, in turn, distinguish simple (artifical) and allergic (sensitization).