PESSARIES: GENERAL NOTES

1. Definition

Pessaries also known as vaginal globules (in Latin *Globuli vaginales*) are solid, single-dose preparations of various shapes, generally spherical or ovoid. Their weight is in the range of 2–4 g. Their volume and consistency are adjusted for vaginal administration. They contain one or more active substances (API) dispersed or dissolved in a suitable (pessary) base which may be soluble or dispersible in water or may melt at body temperature. Pessaries may be classified to :

- *solution-like suppositories* – API is dissolved in base, *e.g.,* disodium tetraborate in glycerine gel of gelatine,
- *emulsion-like suppositories* – API is dispersed (= emulsified) in base, *e.g.,* ichthammol,
- *suspension-like suppositories* – API is dispersed (= suspended) in base, *e.g.,* sulfathiazol.

In addition, they can contain another excipients such as surface-active agents, lubricants, antimicrobial preservatives, *etc*.

2. Pessary Bases

The excipients for making pessaries can be classified, according their *miscibility* with water, into **hydrophobic** or **hydrophilic**. The same classification, as for the rectal suppository bases, is used. Hydrophobic bases should melt at just below body temperature (approximately at 37°C), which allow erosion of the dosage form and release of API. Hydrophilic suppository bases also melt at body temperature, and typically also dissolve or disperse in aqueous media. This allows release to take place via a combination of erosion and dissolution.

Cocoa butter (in Latin *Cacao oleum*) is a natural hydrophobic suppository base. Melting temperature of this base ranges from 31 to 35°C. This base is non-toxic and non-irritant, but may go rancid during storage. Cocoa butter must not be heated to more than 37°C otherwise crystallizes in **undesired crystalline modification** with low melting temperature. **Hard fat** (in Latin *Adeps solidus*), a second common hydrophobic base, is a synthetic suppository base. Its melting point ranges from 30 to 45°C. This base is non-toxic and non-irritant and very stable, it has very good volume contraction.

As hydrophilic bases we can classify **macrogols/polyethylene glycols** (in Latin *Macrogola*). These bases of general formula H-[OCH_2-CH_2]$_n$-OH (n = 300–8000). Melting temperature of macrogols depends on the number of oxyethylene groups. Macrogols solidify quickly and withstand higher temperatures in comparison to hydrophobic bases. They are incompatible with some API (*e.g.,*

salicylic acid) and may cause irritation. The most common hydrophilic pessary base is a **glycerine gel of gelatine**.

3. Prescribing of Pessaries

In Czech Republic, suppositories can be prescribed in dispended (the most common) or divided form. (*Note: prescriptions in Czech Republic are written in Latin*). **Dispended formula** [Latin: **D. t. dos. No. X (decem)** = *Detur tales doses numero decem*] describes how much of API (from prescription) must be **given in one pessary** (unit). For the compounding this amount has to be multiplied by the number of doses (see below):

What is written		*How to read it*
Rp.		[Take!]
Sulfathiazoli	0.4	[0.2 g of sulfathiazol]
Adipis solidi	q. s.	[add Hard fat as much as needed]
D. t. dos. No. X (decem)		[put 0.4 g of sulfathiazol to one pessary and prepare 10 units in this dose]
M. f. glob. vag.		[mix to obtain pessaries]

Divided formula [Latin: **Div. in dos. No. X (decem)** = *Divide in doses numero decem*] describes how much of API (from prescription) must be **divided in desired number of pessaries** (units):

What is written		*How to read it*
Rp.		[Take!]
Sulfathiazoli	4.0	[4.0 g of sulfathiazol]
Adipis solidi	q. s.	[add Hard fat as much as needed]
Div. in dos. No. X (decem)		[divide 4.0 g of sulfathiazol into 10 units and prepare them]
M. f. supp.		[mix to obtain pessaries]

4. Pessaries Compounding

Pessaries can be prepared by fusion moulding. If necessary, solid API (*e.g.,* powders) are previously grinded and sieved through a suitable sieve. When prepared by **fusion moulding**, the mixture of base and API, sufficiently liquified (melted) by heating, is poured into suitable (metal or plastic) mould, see below. The pessary solidifies on cooling. For other notes, see "Suppositories: General notes".

5. Packaging and Storage

Pessaries made in metal moulds must be packed individually into cellophane or aluminium foil (= primary packaging). Pessaries made in plastic moulds stay in the moulds (= primary packaging). Carton boxes or plastic jars (containers) are used as secondary packaging. Pessaries must be stored in a dry places, protected from light. Hydrophilic Pessaries must be kept in tightly closed containers.