

TIU

Faculty of Pharmacy

TECHNOLOGY I

GRADE: 3

ELIXIRS

LECTURE: 8

DR. ROZHAN ARIF MUHAMMAD



Outline

Elixirs

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Elixirs

Are clear, sweetened, hydro alcoholic solutions for oral use, and are usually flavored to enhance their palatability.

non-medicated elixirs are employed as vehicles and medicated elixirs for the therapeutic effect of the medicinal substances they contain.

What are the differences between elixirs and syrups?

Compared with syrups, elixirs are usually

1. Less sweet and less viscous because they contain a lower proportion of sugar and consequently are
2. Less effective in masking the taste of medicinal substances.

Differences between elixirs and syrups?

However, because of their hydroalcoholic character, elixirs are

1. Better able than aqueous syrups to maintain both water-soluble and alcohol soluble components in solution.
2. Also because of their stable characteristics and ease which are prepared (by simple solution), elixirs are preferred over syrups.

In the official elixirs

- The alcohol content varies from 4 to 40 percent.
- Generally, there is just enough alcohol to keep volatile oil or the medicinal substances in solution.
- In addition to alcohol and water, other solvents, such as glycerin and propylene glycol are frequently employed in elixirs as adjunct solvents.

Sweetening of Elixirs

Although many elixirs are sweetened with sucrose or with sucrose syrup, some utilize sorbitol, glycerin and / or artificial sweeteners. Elixirs having a high alcohol content usually utilize an artificial sweeteners, such as saccharin, which is required only in small amounts, rather than sucrose which is only slightly soluble in alcohol and requires greater quantities for equivalent sweetness.

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- Elixirs containing over 10 to 12% of alcohol are usually self preserving and do not require the addition of an antimicrobial agent or their preservation.
 - All elixirs contain flavoring materials to increase their palatability and most have coloring agent to enhance their appearance.
 - Each elixir requires a specific blend of alcohol and water to maintain all the components in solution.
 - Naturally, for elixirs containing agents with poor water solubility, the proportion of alcohol required is greater than for elixirs prepared from components having good water solubility.

Advantages of elixirs

1. Insoluble drug compounds can be incorporated into the hydro-alcoholic vehicle;
2. drug concentrates can be prepared in high-alcohol-containing elixirs
3. Hydro-alcoholic vehicles can be self-preserving;
4. Elixirs are less viscous and contain a lower proportion of sugar.

Disadvantages of elixirs

1. They cannot be administered to pediatric patients and patients on antidepressant medication;
2. the concentration of active and inactive ingredients may vary if not preserved in cool places;
3. water-insoluble drug compounds may precipitate due to alcohol evaporation

Preparation of elixirs:

- Elixirs are usually prepared by simple solution with agitation and/ or by the admixture of two or more liquid ingredients.
- Alcohol-soluble and water-soluble component are generally dissolved separately in alcohol and in purified water, respectively.
- The aqueous solution is added to the alcoholic solution, rather than the reverse, in order to always maintain the highest possible strength so that minimal separation of the alcohol-soluble components occurs.
- When the two solutions are completely mixed the mixture is made to volume with the specific solvent or vehicle.

Preparation

- Frequently the final mixture will not be clear, but cloudy, due principally to the separation of some of the flavoring oils by the reduced alcoholic concentration.
- If this occurs, the elixir is usually permitted to stand for prescribed number of hours, to ensure the saturation of the hydroalcoholic solvent and to permit the oil globules to coalesce so that they may be more easily removed by filtration.
- Talc, a frequent filter aid in the preparation of elixirs, can absorb the excessive amounts of oils and therefore assist in their removal from the solution.

Classification of elixirs

1. Non medicated elixirs

The three most used non medicated elixirs are:

1. Aromatic elixir
2. Compound benzaldehyde elixir
3. Iso-alcoholic elixir.

Aromatic elixir, USP

Is the most widely used. It is a rather simple preparation. Yet it is a difficult to prepare it in small quantities. It consists of compound orange spirit, syrup, alcohol, water, and talc. The difficulty arises from

1. The loss in volume resulting from repeated filtration about 10-20% of volume loss due to this step.
2. The slowness in filtration result from the syrups being added before preparation is filtered. This ingredient, plus the talc, makes it nearly impossible to get a good rate of filtration.

Suggestions

- Dissolving the sugar in the filtrate to increase the rate of filtration
- The use of terpeneless oils (water-soluble) to avoid the difficulty occur (cloudiness) which is due to the insolubility in water of the oils present in compound orange spirit.
- Both suggestions make it possible for elixir to be made more rapidly.

Content of sugar and alcohol in Aromatic elixir

The sugar content of aromatic elixir is about 31 percent, or less than half that of syrup. The alcohol content is from 21 to 23 percent by volume. The elixir may be diluted with water without becoming turbid. Consequently, it can be used with aqueous preparations without producing a milky liquid.

Compound benzaldehyde elixir, NF

Is prepared by simple solution and is used when a bitter almond-like flavor is desired

Iso-Alcoholic Elixir, NF

It is composed of two separate parts, low alcoholic elixir with an alcohol content of from 8 to 10 percent, and high alcoholic elixir with an alcohol content of from 73 to 78 percent.

By mixing two solutions, the final product may be obtained which an alcoholic content within the ranges has required for elixirs.

Low alcoholic elixir:

Compound orange spirit	10 ml
Alcohol	100 ml
Glycerin	200 ml
Sucrose	320 g
Purified water q.s.	1000 ml

High alcoholic elixir

Compound orange spirit	4 ml
Saccharin	3 g
Glycerin	200 ml
Alcohol q.s .	1000 ml

Medicated Elixirs

Medicated elixirs which have therapeutic action, e.g. Phenobarbital elixir.

Medicated elixirs can be described by further classifying them according to their therapeutic activity.

1. Antihistamine elixirs
2. Sedatives and Hypnotics elixirs
3. Expectorants and cough preparation
4. Miscellaneous medicated elixirs

Antihistamine Elixirs

This is the largest group of elixirs having a definite therapeutic action.

- Antihistamines are useful primarily in the symptomatic relief of certain allergic disorders.
- In their action, they suppress symptoms caused by histamine, one of the chemical agents released during the antigen-antibody reaction of the allergic response. .e.g.

1. Diphenhydramine HCl Elixir
2. Chlorpheniramine HCl Elixir

Sedative and Hypnotics

This is the second largest group of elixirs e.g. Phenobarbital Elixir .

Barbiturate in general used in low dosage as sedatives and in higher dosage as hypnotics.

They are either long-acting sedation, intermediate sedation or short-acting sedation.
Phenobarbital is used for long-acting sedation.

Role of glycerin in phenobarbital elixir

Glycerin and glycerin water solutions are poor solvents for phenobarbital. But the solubility of phenobarbital in alcohol is enhanced by the addition of glycerin.

The solubility of phenobarbital in 10% alcohol solution is 0.19% while the solubility is increased to 0.5% by using 10% alcohol + 40% glycerin.

Expectorants and cough preparations

1. Terpin Hydrate Elixir, NF.
2. Terpin hydrate and dextromethorphan Hydrobromide Elixir, NF.
3. Terpin Hydrate and codeine Elixir, NF

These elixirs contain the highest percentage of alcohol (39 to 44%) of all elixirs in order to keep the terpin hydrate in solution. Terpin Hydrate and codeine elixir is an example of narcotic elixir. Terpin Hydrate and Dextramethorphan HBr elixir is non-narcotic elixir.

Terpin hydrate and codeine elixir

A preparation of the expectorant terpin hydrate, with sweet orange peel tincture, benzaldehyde, glycerin, alcohol, syrup, water, and the antitussive opiate codeine. Terpin hydrate diminishes secretions and promotes healing of the mucous membrane, and codeine depresses the cough center in the medulla oblongata. Prolonged use may lead to addiction.

Miscellaneous Elixirs

1. Digoxin Elixir USP, is used as a cardiotonic.
2. Acetaminophen Elixir, NF, which is used as analgesic.
3. Dexamethasone Elixir, NF, contains a synthetic adrenocorticosteroid and is used in the treatment of rheumatoid arthritis and other conditions for which corticosteroid therapy is indicated.

Storage of elixir:

Because of their usual content of volatile oils and alcohol, elixirs should be stored in tight, light resistant containers and protect from excessive heat.

