Guidelines for Manufacturing Homeopathic Medicines

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1. DEFINITIONS / NOMENCLATURE / GENERAL COMMENTS

1.1. The Homœopathic Pharmacopœia of the United States is the book of standards for source, composition, identity and specifications for preparation and quality of homoeopathic drug products.

1.2. Homeopathic drugs are defined as substances that have the power of *influencing* the health of the living organism. Each drug is capable of exerting this power in a manner peculiar to itself, and may be distinguished from other drugs in their tests (provings hyperlink to text outside General Pharmacy) upon the normal organism. In addition, substances that are potentially toxic or pathogenic under certain conditions may, when prepared homeopathically, be capable of therapeutic effect in disease.

1.3. Homoeopathic drugs, by international convention, are designated by their Latin names.

1.4. In many homeopathic texts the words "potency" and "potentization," "dilution", and "solution" are synonymous with the terms "attenuation" (see §25) or "trituration" (see §33). By decision of the Pharmacopœia Convention, the official designations are "attenuation" for liquids and "trituration" for solids.

1.5. The metric system of weights and measures generally is employed and is the standard for measurement in the Homœopathic Pharmacopœia of the United States. Unless otherwise specified, when the text refers to measurement by “parts”, a consistent system, utilizing either weight or volume, for every step is required. Liquid substances may be measured by volume or

by weight, and may be adjusted for temperature if necessary. Solids or insoluble substances are to be measured by weight.

1.6. Unless otherwise specified in the individual monograph, *fresh* botanical or zoological raw material is required for the preparation of tinctures whenever possible. However, the water contained in the fresh raw material is considered merely a solvent and is not calculated as part of the medicinal substance. In other words, the moisture content of the fresh botanical or zoological raw material is to be regarded as part of the menstruum or vehicle. Therefore, the calculated dry weight of the raw material, rather than the total weight of the fresh material, is taken as the starting point from which to base the calculation of strength. Exceptions to this general rule are identified in the respective monographs or classes.

1.7. Acids, bases and other chemicals may be only available in a hydrated state. The water of hydration is considered merely a solvent and is not calculated as part of the medicinal substance. Therefore, the anhydrous form of the raw material, rather than the hydrated form, is taken as the starting point from which to base the calculation of strength. Exceptions to this general rule are identified in the respective monographs.

1.8. When the respective monograph for a chemical substance specifies "freshly made", this indicates the solution or trituration is not to be stored unless stability data confirms a longer possible time period before further processing. Unless otherwise stated in the monograph, the term "freshly made" refers to all attenuations up through 6X or 3C.

1.9. Ten (10) parts of the tincture, the 1X solution, or the 1X trituration, represent one (1) part of medicinal raw material. Exceptions to this general rule are identified in the respective monographs or classes.

1.10. Liquid preparations consist of aqueous or hydro-alcoholic solutions, tinctures and higher attenuations, and are attenuated with succussion (see §28), generally using alcohol and/or water, in decimal or centesimal progression. These liquid preparations are dispensed as oral or sublingual drops, ophthalmic (see §45), otic (see §47), oromucosal (see §46), or nasal preparations (see §44), or can be incorporated into a variety of bases for topical use (see §50).

1.11. Insoluble raw materials are attenuated by trituration (see §33 and 34), generally using lactose monohydrate, in decimal or centesimal progression. These are dispensed as powders, tablet triturates or compressed tablets, or may be converted to liquid attenuations (see §35).

1.12. Unless otherwise specified in the HPUS, when a percentage variance is stated, it is to be understood that the numbers represent an 'absolute' variance. For instance, when the HPUS states that a +/- 15% variance is allowed in the alcohol content of a tincture, this it to be understood that a '55% alcohol' specification allows for an alcohol content ranging from 40% - 70% due to the inherent natural variability of moisture in the starting botanical raw material. When a 'relative' percentage variance is stated, it is to be understood that this refers to a percentage of the specification itself. For instance, if the HPUS states that 'up to a 50% (relative) variance in the dry residue' can be adjusted per an official HPUS procedure, this is to be understood that a specification of 'not less than 0.8% dry residue' allows tinctures with dry residues between 0.4% and 0.8% to be candidates for ' tincture adjustment' (see §24).

1.13. Unless otherwise specified in the *Guidelines for Manufacturing Homeopathic Medicines* Text, a specific attenuation level given in any example is to be considered the lowest attenuation at which that process should be made; the same process can proceed at a higher attenuation if needed. For example, Chapter 33 gives the conversion of triturations of insoluble basic substances into liquid attenuations starting at the 6X attenuation. However, if circumstances dictate, this conversion can be made instead from a stock trituration at any higher attenuation.

1.14. The requirements of CFR 211, Subpart E must be complied with for all incoming components. All processes used for preparing homeopathic drug products must comply with applicable federal regulatory requirements. Manufacturers are encouraged to reference 21 CFR parts 210 and 211, as well as FDA guidance documents on Process Validation and Cleaning Process Validation. The most recent versions of all CFR, USP and FDA guidance documents must be used.

2. DILUENTS AND VEHICLES

2.1. Alcohol, purified water, and/or glycerin are generally suitable vehicles for attenuation of liquids.

2.1.1. Strong Alcohol (Alcohol Fortier) contains 92.3% by weight or 94.9% by volume of ethyl alcohol (C_2H_5OH, m.w. 46.07) and 7.7% by weight or 5.1% by volume of water. (Its specific gravity at 15.56° C. (60° F.) is about 0.816.) It must meet the test for identity and purity described in the USP. Strong Alcohol should be kept in well-stoppered bottles, in a cool place, and, due to its flammable nature, remote from fire. It may be diluted to any degree with purified water. When the term Alcohol is specified, it is understood to refer to Strong Alcohol unless otherwise designated.

2.1.2. Dispensing Alcohol (Alcohol Officinale) contains not less than 70% v/v ethyl alcohol. Dispensing Alcohol should be used for making most attenuations from tinctures as this concentration is more readily absorbed by sucrose and lactose. It is consequently specified when the final liquid attenuation is used for medicating purposes.

2.1.3. When homeopathic attenuations are intended for oral or sublingual administration in liquid form, the final attenuation may be prepared with an appropriate percentage of alcohol:

2.1.3.a. to prevent precipitation during the attenuation process, there should be no more than a 15% differential in alcohol content between any attenuation and the subsequent attenuation made from it;

2.1.3.b. the alcohol content must not be less than 20% v/v for any liquid attenuation, unless prepared with a suitable preservative system (see §5.6).

2.1.3.c. As an example: for a tincture containing 90% alcohol v/v, the 2X attenuation should contain no less than 75% alcohol v/v; the 3X attenuation should contain no less than 60% alcohol v/v; the 4X attenuation should contain no less than 45% alcohol v/v; the 5X attenuation should contain no less than 30% alcohol v/v; and the 6X attenuation should contain no less than 20% alcohol v/v.

2.1.3.d. Many tinctures contain 65% alcohol v/v; when a 2X attenuation is prepared for oral or sublingual administration, it may, by convention, be made with 60% alcohol v/v.

2.1.3.e. The preceding may supersede the requirements within other sections with reference to the use of dispensing alcohol.

2.1.4. Homeopathic attenuations intended for oral or sublingual administration in liquid form may be produced in non-alcoholic media, provided the final dosage form is prepared with a suitable preservative system (see §5.6) and is protected from decomposition. Alternatively, they may be packaged in sterile single dose containers, or multiple dose containers that include labeling with appropriate storage conditions (both before and after opening) based upon stability testing. Any preservative system must comply with USP standards for antimicrobial effectiveness.

2.1.5. Purified Water must meet the tests for purity described in the United States Pharmacopœia (USP).

2.1.6. Glycerin (Glycerinum, Glycerol) is a Polyhydric Alcohol which contains 95% $C_3H_5(OH)_3$. Glycerin must meet the tests for identity and purity described in the United States Pharmacopœia (USP).

2.2. Lactose monohydrate is the preferred vehicle for the preparation of triturations. Lactose monohydrate and / or sucrose are generally used for the manufacture of granules, globules, and tablets.

2.2.1. Lactose monohydrate ($C_{12}H_{22}O_{11}$, m.w. 342.30) must meet the tests for identity and purity described for Lactose in the United States Pharmacopœia (USP).

2.2.2. Sucrose ($C_{12}H_{22}O_{11}$, m.w. 342.30) must meet the tests for identity and purity described in the United States Pharmacopœia (USP).

2.3. All diluents used must follow the guidance of §1.14.

3. DEFINITION AND PROPERTIES OF DRUGS

3.1. Medicinal raw materials may be of chemical, botanical and zoological origin.

4. CHEMICAL SUBSTANCES

4.1. Chemical starting materials are those from inorganic or organic chemical products, complex substances of mineral origin, or products defined only by their manufacturing process.

5. CLASS A AND CLASS B -- PREPARATIONS OF SOLUTIONS

5.1. All chemical raw materials soluble in the usual vehicles (see §2.1) are normally prepared as solutions and their attenuations. Moist and/or soluble substances may also be prepared as triturations (see §33) with lactose monohydrate.

5.1.1. Note: chemical raw materials that are insoluble or only partially soluble may be attenuated as per Class F (see §33) or Class G (see §34), and are converted into liquid attenuations as per Class H (see §35).

5.2. In calculating the ratio of chemical raw material to diluent, the guidelines on water of hydration (see §1.7) apply.

5.3. Class A: The first solution is prepared in the proportion of one (1) part of medicinal raw material in a total of ten (10) parts of completed solution using purified water or alcohol of suitable strength, unless otherwise specified in the respective monograph. The resulting solution (10 %)

is the first decimal attenuation (1X). Subsequent attenuations are prepared as specified in DECIMAL SCALE OF ATTENUATION (see §26).

5.3.1. If desired, the Class A first decimal attenuation (1X) may be processed an additional step using a 1:10 ratio. This is normally the second decimal attenuation (2X); however, it may also be labeled as the first centesimal attenuation (1C) and further processed as specified in CENTESIMAL SCALE OF ATTENUATION (see §27).

5.4. Class B: If the medicinal raw material is not soluble in the proportion of 10%, it is prepared in the proportion of one (1) part of medicinal raw material in a total of one hundred (100) parts of completed solution using purified water or alcohol of suitable strength, unless otherwise specified in the respective monograph. The resulting solution (1 %) is the second decimal attenuation (2X), or first centesimal attenuation (1C). Subsequent attenuations are prepared as specified in DECIMAL SCALE OF ATTENUATION (see §26) or in CENTESIMAL SCALE OF ATTENUATION (see §27). Exceptions are noted in the respective monographs, and must be prepared to contain 0.1%: the third decimal attenuation (3X); or 0.01%: the 4th decimal attenuation (4X).

5.5. If the medicinal raw material is soluble in water but not in alcohol, or, when soluble in alcohol, is subject to chemical change or decomposition, it may be prepared as an aqueous solution as specified in the respective monograph. Aqueous solutions are generally unstable and must be "freshly made" (see §1.8); they may be stored only as long as their stability is demonstrated.

5.6. Non-alcoholic solutions should be used immediately to prepare stable and suitably preserved dosage forms. All non-alcoholic solutions that are potentially subject to microbial contamination must be prepared with a suitable preservative system; any preservative system must comply with USP standards for antimicrobial effectiveness. Preservatives or stabilizers, if used, must be added only after the final attenuation, and must be declared on the label. Alternatively, non-alcoholic solutions may be immediately processed into higher attenuations for medicating purposes, using dispensing alcohol as the diluent for the final two decimal attenuations or final centesimal attenuation.

6. ZOOLOGICAL SUBSTANCES

6.1. Zoological raw materials may be Sarcodes (see §7 and 8), or Nosodes (see §9).

7. CLASS E SARCODES

7.1. Class E Sarcodes are homeopathic drugs prepared from entire animals (living or dried insects, arachnids, mollusks, etc.), dried exocrine glands with their secretions (Moschus, Castoreum), the secretion itself (Ambra grisea, Sepia), and rudimentary organs (Castor equi), or parts of animals.

7.2. Class E, Method I: Except as specified in the respective monograph, tinctures of zoological raw materials are prepared in the proportion of one (1) part of the medicinal raw material in a total of twenty (20) parts of tincture using 65% alcohol or the strength specified in the respective monograph. The resulting solution (5%) is the Class E Tincture. The 2X attenuation is prepared by using two (2) parts of this 1:20 tincture with eight (8) parts of diluent. Subsequent attenuations are prepared as specified in DECIMAL SCALE OF ATTENUATION (see §26) or in CENTESIMAL SCALE OF ATTENUATION (see §27).

7.3. Class E, Method II: Except as specified in the respective monograph, tinctures of zoological raw materials are prepared in the proportion of one (1) part of the medicinal raw material in a total of

ten (10) parts of finished tincture using 65% alcohol or the strength specified in the respective monograph. The resulting solution (10%) is the Class E-II Tincture, which is equivalent to the 1X attenuation. The 2X attenuation is prepared by using one (1) part of this 1:10 tincture with nine (9) parts of diluent. Subsequent attenuations are prepared as specified in DECIMAL SCALE OF ATTENUATION (see §26) or in CENTESIMAL SCALE OF ATTENUATION (see §27).

7.4. Incapacitation

7.4.1. Zoological raw materials, especially venomous insects and arachnids, that must be used alive to prepare the tincture, may be placed immediately after capture in an air tight container containing a small quantity of strong alcohol (but less than the total amount needed for preparing the tincture) to kill them quickly. The container must be labeled to identify: the species; the date and place of capture; the quantity and strength of alcohol used.

7.4.2. Upon receipt, the quantity and strength of the alcohol used to incapacitate the raw material must be taken in account when calculating the amount of alcohol to be added when preparing the tincture.

7.4.3. Animals can also by incapacitated by exposure to cold before being placed alive in alcohol, or by exposure to a carbon dioxide-filled atmosphere prior to maceration.

7.4.4. Other than alcohol or carbon dioxide, chemical substances, especially insecticides, must not be used to kill or incapacitate the animal. The use of dead, decomposed or dried animals is prohibited unless otherwise specified in the individual monograph.

7.5. Place the zoological raw material, suitably subdivided, into a macerating jar or wide mouthed vessel, and add the calculated quantity of alcohol and purified water, covering, if possible, the whole mass. The jar or vessel should be carefully sealed to prevent evaporation, placed in a dark room at controlled room temperature, and shaken or agitated at appropriate intervals.

7.6. The time period necessary for the extraction of the medicinal substance is variable but a minimum of 5 days is required. Then decant the clear liquid. Allow the liquid to stand for 48 hours, then filter to remove any remaining particulate matter such that the filtrate is clear at the time of filtering. Store in a tightly closed container, made of glass or other inert material, in an appropriate area. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the tincture represents (e.g. 1:20, or 1:10), as well as the Class E method used (e.g. Method I or Method II).

7.7. Class E tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

8. CLASS L SARCODES

8.1. Class L Sarcodes are homeopathic drugs prepared from wholesome organs or tissues obtained from healthy specimens, and not already included in other classes. They should be protected against light, air and moisture if they are to be stored before being made into tinctures or triturations, unless otherwise specified in the monograph.

8.2. In the preparation of sarcodes, the raw material must not be altered and the final product is not adulterated by pathogens or other deleterious substances. (Hyperlink to GMP Section 4.2). Class L sarcodes are attenuated by one of two methods that vary in their prescribed diluents from other attenuations (see §25).

8.2.1. METHOD I:

8.2.1.a. The freeze-dried organs, glands, or tissues may be attenuated as per Class F (see §33), and may be converted into liquid attenuations as per Class H (see §35).

8.2.1.b. Alternatively, one (1) part of freeze dried medicinal raw material is mixed with ninety-nine (99) parts of a mixture comprised of three (3) volumes of purified water, one (1) volume of glycerin and one (1) volume of alcohol.

8.2.1.c. Succuss (see §28), and then filter, if necessary. The result is the 1C attenuation. To one (1) part of the 1C attenuation, add ninety-nine (99) parts of a mixture comprised of three (3) volumes of purified water, one (1) volume of glycerin and one (1) volume of alcohol. Succus. The result is the 2C attenuation. The subsequent attenuations are prepared (see §25) using dispensing alcohol or the specified diluent.

8.2.2. METHOD II:

8.2.2.a. The fresh medicinal raw material is coarsely ground. One (1) part is combined with 9 parts of 85% glycerin. Store protected from light for not less than seven (7) days. Decant, and filter if necessary. The resulting solution is equivalent to the 1X attenuation. Subsequent attenuations are prepared (see §25) using 85% glycerin as the diluent.

8.2.2.b. Alternatively, combine one (1) part of the coarsely ground raw material with five (5) parts of a salt solution (sodium chloride [1.5-8.0% w/w] in purified water) and ninety-five (95) parts of glycerin. Store protected from light for not less than seven (7) days. Decant, and filter if necessary. The resulting solution is equivalent to the 2X attenuation. Subsequent attenuations are prepared (see §25) using a salt solution composed of 0.2 parts of sodium hydrogen carbonate and 8.8 parts of sodium chloride in 991 parts of Water for Injection as the diluent.

8.3. Class E tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

9. CLASS I NOSODES

9.1. Nosodes are homeopathic drugs prepared from zoological starting materials that are obtained from causative agents or pathological products, such as pathological organs or tissues; causative agents such as bacteria, fungi, ova, parasites, virus particles, and yeast; disease products; excretions or secretions. They should be protected against light, air and moisture if they are to be stored before being made into solutions or triturations, unless otherwise specified in the monograph.

9.2. In the preparation of nosodes the raw material must not be altered and the final product is not adulterated by pathogens or other deleterious substances. (Hyperlink to GMP Section 4.2). The first attenuation must be rendered sterile (see §53). Nosodes may not be dispensed in attenuations 1X through 5X. In no case should a Nosode be dispensed in attenuations below those stated in the monograph.

9.3. Fresh, moist, or dry soluble medicinal raw materials are attenuated as per Class A (see §5.3) or Class B (see §5.4).

9.4. Fresh, moist, or dry insoluble medicinal raw materials are attenuated as per Class F (see §33), and may be converted to a liquid attenuation as per Class H (see §35).

10. BOTANICAL SUBSTANCES

10.1. Botanical substances include preparations made from: whole plants (planta tota), leaves (folia), herbs (herbae), buds (gemmae), flowers (flores), stems (stipites), barks (cortices), woods (ligna), roots (radices), fruits (fructi), seeds (semina) and berries (baccae).

11. BOTANICAL SUBSTANCES – COLLECTION INFORMATION

11.1. Only clean specimens should be selected; if this is not possible, the specimens should be carefully cleaned by shaking, gentle rubbing, or brushing, without the contact of much water. Each type of plant part is best harvested according to the following:

11.2. Whole Plants (planta tota) [plant with the underground parts] are to be collected in the flowering season during sunny weather.

11.3. Leaves and Aerial Parts (Folia, Herbae) [plant without the underground parts] are to be collected when fully developed, shortly before the flowering season.

11.4. Flowers and Flowering Tops (Flores) [inflorescence with not more than 15 cm of stem] are to be collected in dry, sunny weather at the beginning of the flowering season.

11.5. Stems (Stipites) are to be collected after the development of the leaves, and treated the same as leaves.

11.6. Barks (Cortices) of resinous trees are to be collected at or about the time of development of leaves and blossoms. Non-resinous barks are to be collected late in the autumn from young, vigorous trees.

11.7. Woods (Ligna) are to be collected early in the spring from vigorous young trees and tree-like shrubs, before the sap rises.

11.8. Roots and Rootlets (Radices), Rhizomes [underground stems with or without the roots, according to the species], and Subterranean Parts [roots with the bulb, tuber, stock or rhizome, according to the species] of annuals are to be collected early in the fall because they die after the ripening of the seeds. Those of biennials are to be collected in the spring. Those of perennials are to be collected in the second and third year, before they develop woody fiber. All should be cleansed without the use of much water, and used as fresh as possible. Roots or other subterranean parts obtained in the market should be carefully examined for mold, dampness and woody appearance.

11.9. Fruits, Seeds, and Berries (Fructi, Semina, Baccae) with few exceptions are to be collected when ripe. If succulent, they should be processed at once, while fresh and perfect. Only dried seeds and fruits may be kept in tightly closed vessels.

11.10. Gums, balsams and resins are to be collected when they begin to flow.

11.11. Botanical raw materials are to be as free as practical from insects or other animal life, animal material or animal excreta. They are to be free from mold and shall show no discoloration, abnormal odor, or deterioration due to any cause.

11.12. Freshly gathered botanical raw materials that are to be used in their fresh state should be kept in a cool place and be processed further as soon as possible. If this cannot be done immediately, such substances should not be allowed to dry. This is best prevented by keeping them as cool as possible, while avoiding freezing. The materials should not be immersed in water, but merely dampened, in order to not prematurely begin the extraction process, nor to dilute the fluids in the medicinal raw material; the amount of purified water thus used is to be ascertained and considered a part of the menstruum when further preparing the tincture.

11.13. Botanical raw materials that are to be used in their dry state may be stored before use in tightly closed containers and protected from light, heat and moisture. Those substances that are particularly odoriferous must be kept in tightly closed containers adapted to this purpose, in order that the peculiar odor of such drugs may not be imparted to other materials.

12. CLASS C AND CLASS D BOTANICAL TINCTURES – General information

12.1. It is very important that tinctures are of uniform strength; they should not vary greatly on account of the variability of moisture contained in the same species under different conditions of growth and by handling after collection.

12.2. Class C: Fresh succulent plants and plant parts containing water should be prepared as follows: the plant moisture is to determined through an appropriate differential method and is calculated as part of the total preparation. The calculated dry weight of the medicinal raw material remaining after evaporation is taken as the unit of strength from which to calculate the strength of the tincture. Unless otherwise specified in the respective monograph, the tincture is prepared in the proportion of one (1) part of equivalent dried medicinal raw material in a total of ten (10) parts of tincture using alcohol of the strength specified in the respective monograph. The resulting solution (10%) is labeled with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material; the “Tincture” is equal in concentration to the first decimal attenuation (1X). Subsequent attenuations are prepared as specified (see §25).

12.3. Class D: In some cases, specified in the respective monograph, the tincture is prepared in the proportion of one (1) part of calculated dried raw material in a total of twenty (20) parts of tincture using alcohol of the strength specified in the respective monograph. The resulting solution (5%) is labeled with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material. The 2X attenuation is prepared by using two (2) parts of this 1:20 tincture with eight (8) parts of diluent. Subsequent attenuations are prepared as specified (see §25).

12.4. The Pharmacopœia Convention has adopted the following general rules for determining the alcohol strength of the final tincture, which is stated in the respective monographs:

12.4.1. when the botanical raw material is a gum or resin, or when it contains volatile oils, provided the moisture content of the raw material is less than 42%, the tincture is prepared with a final alcohol content of 90% v/v;

12.4.2. when the botanical raw material contains volatile oils, tannins or alkaloids, provided the moisture content of the raw material is less than 79%, the tincture is prepared with a final alcohol content of 65% v/v;

12.4.3. when the botanical raw material contains volatile oils, tannins or alkaloids, provided the moisture content of the raw material is more than 79% but not higher than 83%, the tincture is prepared with a final alcohol content of 55% v/v;

12.4.4. when the botanical raw material contains mucilage, sugars, etc., provided the moisture content of the raw material is less than 85%, the tincture is prepared with a final alcohol content of 45% v/v;

12.4.5. when the botanical raw material contains a high proportion of fibers as well as a high moisture content, the tincture is prepared with a final alcohol content of 35% v/v;

12.4.6. Botanical raw materials with a moisture content higher than 85 percent, such as mushrooms, succulent plants or fruits, or fleshy roots, cannot be prepared as 1:10 tinctures, because the final alcohol content of such tinctures would not be high enough to enable them to be stored. Such raw materials are therefore prepared as Class D 1:20 Tinctures (see §12.3) as specified in the respective monograph.

12.5. A tolerance of +/-15% of the stated final alcohol strength is permissible in the final tincture.

12.6. Calculations of quantities of strong alcohol and purified water to be added to obtain a tincture at the desired alcohol strength:
- 1:10 tinctures (Class C):

$A = DD \cdot a$

$W=(DD \cdot 10) - A - M$

1:20 tinctures (Class D):

$A = DD \cdot a \cdot 2$

$W = (DD \cdot 20) - A - M$

Where DD = weight of dry drug in the fresh moist raw material

M = weight of the moisture

A = weight of strong alcohol to be added

W = volume or weight of purified water to be added

a = coefficient from the following table:

Alcohol content of the tincture	Coefficient
90% v/v	a = 9.27

65% v/v	a = 6.19
55% v/v	a = 5.11
45% v/v	a = 4.10
35% v/v	a = 3.13

13. BOTANICAL TINCTURE PREPARATION

13.1. Tinctures are primary prepared using the process of maceration (see §14). Other methods listed below have also been traditionally used, and if utilized, must be stated in the labeling.

Percolation (see §15)

Decoction (see §16)

Fermentation (see §17)

Incubation (see §18)

Infusion (see §19)

Succus (see §20)

14. MACERATION METHOD

14.1. This process is preferable for the preparation of large quantities of botanical raw material requiring ample time for the extraction of medicinal properties. Such would be the case with gummy and mucilaginous staring materials, or those having significant quantities of viscid juice that would prevent the alcohol from permeating the mass as rapidly as is necessary in the process of percolation (see §15).

14.2. Place the finely subdivided raw material (or in its natural state if not reducible) into a macerating jar or wide mouthed vessel, and add the calculated quantity of alcohol and purified water, covering, if possible, the whole mass. The jar or vessel should be carefully sealed to prevent evaporation, placed in a dark room at controlled room temperature, and shaken or agitated at appropriate intervals. The time period necessary for the extraction of the medicinal substance is variable; it is safe to allow the process of maceration to continue from two (2) to four (4) weeks. Then decant the clear liquid and express the mark to obtain the maximum quantity of liquid. Filter the combined liquids to remove any remaining particulate matter such that the filtrate is clear at the time of filtering. Store in a tightly closed container, made of glass or other inert material, in an appropriate area. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the tincture represents (e.g. 1:10).

14.3. If the starting substance is viscid or mucilaginous, and is not readily acted on by the alcohol, use only one-half of the alcohol and purified water calculated for the tincture and proceed as above to macerate the raw material. After maceration, express the mark. Triturate the mark lightly in a mortar, add twice its volume of a suitable homeopathically inert filter medium, and, with the remaining half of the calculated amounts of alcohol and purified water, subject the whole to the process of percolation (see §15).

14.4. Filter the combined liquids to remove any remaining particulate matter such that the filtrate is clear at the time of filtering. Store the tincture in a tightly closed container, made of glass or

other inert material, in an appropriate area. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the tincture represents (e.g. 1:10).

14.5. Maceration method tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

15. PERCOLATION METHOD

15.1. This method is preferable for the preparation of dried botanical raw materials that have been reduced to the proper degree of fineness.

15.2. The percolator should be provided with a stopcock or other device to control the flow. Insert a plug of absorbent cotton into the neck above the stopcock, and cover with a layer of suitable filter medium.

15.3. Carefully mix the ground finely subdivided or ground raw material with a sufficient amount of the calculated quantity of alcohol and purified water to create a uniform and damp mass. Transfer the mass to the percolator, packing it loosely over the filter medium. Cover the surface of the mass with a disc of filter paper. Close the top of the percolator and allow to stand for one hour; then pack the mass firmly in the percolator.

15.4. Pour a sufficient quantity of the calculated volume of alcohol and purified water upon the contents of the percolator until the mass is covered. Seal the percolator to prevent evaporation. Close the stopcock as soon as the fluid begins to drip. After allowing it to stand 24 hours or longer, according to the nature of the contents, pass the fluid through the percolator into a receiving vessel limiting the flow to 10 to 30 drops per minute by means of the stopcock. Additional quantities of the calculated alcohol and purified water should be added to keep the mass covered, thereby preventing access of air. Proceed in this manner until the calculated quantity of liquid has been collected.

15.5. Filter the collected liquid to remove any remaining particulate matter such that the filtrate is clear at the time of filtering. Store the tincture in a tightly closed container, made of glass or other inert material, in an appropriate area. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the tincture represents (e.g. 1:10).

15.6. If the tincture prepared by percolation represents any ratio other than one (1) part of medicinal raw material in ten (10) parts of completed tincture, the percolation method tincture must first be diluted to a 1:10 proportion (on a dry weight basis) to prepare the 1X attenuation, or to a 1:100 proportion (on a dry weight basis) to prepare the 1C attenuation.

15.7. Percolation method tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

15.8. All tinctures prepared using percolation, and all attenuations prepared from these tinctures, must bear the term "percolation" on all labeling as part of the name of the drug, just before the designation of the homeopathic strength.

16. DECOCTION METHOD

16.1. This process may be preferable in the treatment of fibrous botanical raw material, such as roots, barks, and woody substances.

16.2. Place the finely subdivided raw material and the calculated quantity of alcohol and purified water into a suitable tightly closed vessel and allow to stand overnight. Then heat the mass, under a reflux condenser, and maintain at the boiling point for 30 minutes. After allowing to cool, the container should be well sealed and placed in a dark room at controlled room temperature, and agitated at appropriate intervals. The time necessary for the extraction of the medicinal substance is variable; it is safe to allow the further process of maceration to continue from two to four weeks. Then decant the clear liquid and express the mark to obtain the maximum quantity of liquid. Filter the combined liquids to remove any remaining particulate matter such that the filtrate is clear at the time of filtering. Store the tincture in a tightly closed container, made of glass or other inert material, in an appropriate area. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the tincture represents (e.g. 1:10).

16.3. If the tincture prepared by decoction represents any ratio other than one (1) part of medicinal raw material in ten (10) parts of completed tincture, the decoction method tincture must first be diluted to a 1:10 proportion (on a dry weight basis) to prepare the 1X attenuation, or to a 1:100 proportion (on a dry weight basis) to prepare the 1C attenuation.

16.4. Decoction method tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

16.5. All tinctures made with this additional process, and all attenuations prepared from these tinctures, must bear the term "Decoction" on all labeling as part of the name of the drug, just before the designation of the homoeopathic strength.

17. CLASS P FERMENTATION

17.1. This process may be preferable in the preparation of botanical raw materials when the desired tincture should contain a minimal amount of alcohol or be alcohol free. Thus, the normal dissolving action of alcohol in the extraction of the plant material must be replaced by the breaking down activity of the fermentation process. Either lactic acid fermentation or an alcoholic fermentation can be used with suitable fermentation starters and aids.

17.2. Lactic Acid Fermentation

17.2.1. The botanical raw material is finely subdivided. Combine with purified water and whey or lactose plus honey if necessary according to the respective monograph. In the absence of specification in the monograph, use the following proportions (see note below)

A) Purified water and whey: (parts per 100 parts plant material)

	a)	b)	c)	d)	e)	f)
Purified water	-	25	75	110	225	300
Whey	50	50	50	15	50	200

B) Purified water, honey, and lactose: (parts per 100 parts plant material)						
	a)	b)	c)	d)	e)	f)
Purified water	50	75	125	200	275	500
Honey	0.75	0.75	0.75	0.75	0.75	0.75
Lactose	0.75	0.75	0.75	0.75	0.75	0.75

17.2.2. Measure the starting pH of the mixture. Hold the mixture at 37° C. A two-hour cooling period in an ice water bath may be necessary twice daily. Allow the fermentation process to proceed until the pH begins to drop, and then hold the mixture at controlled room temperature. Three and a half days after combining the medicinal raw material with the purified water and the whey, or honey and lactose, express the mass and collect the liquid. Hold the liquid for another three and a half days at controlled room temperature while cooling it twice daily in an ice water bath. Incinerate the plant residue and add the ash to the collected liquid (at least 50 mg ash/100 ml liquid). Store the resulting liquid in a tightly closed container, made of glass or other inert material, at 2 to 8 ºC for six (6) months prior to use. In case there is additional precipitation, filter the tincture before use. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the tincture represents (e.g. 1:3).

17.2.3. Note -- If the f) proportion is used, divide the medicinal raw material into seven (7) equal portions and mix one (1) portion with the purified water and the whey or the honey and lactose. Store the mixture as described above. Press the mass after one day, and mix the expressed liquid with the second portion of the medicinal raw material and repeat the process. Continue until after seven (7) days all portions of the plant material are used. Then continue with the addition of the incinerated combined residues and store as described above.

17.3. Ethanolic Fermentation

17.3.1. The botanical raw material is finely subdivided. Combine with purified water and yeast, plus sucrose if necessary, according to the respective monograph. In the absence of specification in the monograph, use the following proportions:

17.3.2. Zimpel method:

17.3.2.a. Fresh medicinal raw material: one (1) part botanical raw material plus one (1) part purified water plus 0.005 parts yeast

17.3.2.b. Dried medicinal raw material: one (1) part botanical raw material plus three (3) parts purified water plus 0.01 parts yeast

17.3.3. Pekana method:

17.3.3.a. One (1) part botanical raw material (fresh or dried) plus six (6) parts purified water plus one (1) part sucrose plus 0.005 parts yeast

17.3.4. Krauss method:

Moisture (M%)	Purified water W [kg]	Sucrose S [g]	Yeast Y [g]	Alcohol E [kg]
>70%	PM·M%/100	2·PM·M%	0.1·PM·M%	PM·M%/100
40-70%	2·PM·M/100	3·PM·M%	0.15·PM·M%	PM·M%/100
<40%	3·PM·M%/100	4·PM·M%	0.2·PM·M%	2PM·M%/100
dried	4·PM	0.4·PM	0.002·PM	4·PR

M%: Moisture content of botanical raw material

PM: Mass of botanical raw material

PR: Mass of air-dried pressed plant residue

E: Amount of alcohol 86% needed to percolate the pressed plant residue

17.3.5. Hold the mixture at 18 to 35 °C. When the fermentation ceases, either distill the liquid fraction and collect the distillate, or press the mass and collect the liquid. For the Zimpel and Pekana methods, incinerate the plant residue and add the ash to the collected liquid. For the Krauss method, re-extract the remaining plant mass via percolation with 86% alcohol and combine the two liquid fractions.

17.3.6. Filter the collected liquid to remove any remaining particulate matter such that the filtrate is clear at the time of filtering. Store the tincture in a tightly closed container, made of glass or other inert material, in an appropriate area. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the Class P tincture extract represents (e.g. 1:4).

17.4. Class P tinctures are made to represent one (1) part of medicinal raw material in a stated number of parts of completed tincture.

17.4.1. For further attenuation, the Class P tincture should first be diluted to a 1:10 proportion (on a dry weight basis) to prepare the 1X attenuation, or to a 1:100 proportion (on a dry weight basis) to prepare the 1C attenuation. As an example, for a Class P tincture made in the proportion of one (1) part of the plant material in a total of four (4) parts final tincture:

17.4.2. For Decimal attenuations.

17.4.2.a. To four (4) parts of Class P tincture, add six (6) parts of diluent. Succuss (see §28). The result is the 1X attenuation. Subsequent attenuations are prepared as per §26.

17.4.3. For Centesimal attenuations.

17.4.3.a. To four (4) parts of Class P tincture, add ninety-six (96) parts of diluent. Succuss (see §28). The result is the 1C attenuation. Subsequent attenuations are prepared as per §27.

17.5. Class P fermentation tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

17.6. All tinctures made with this additional process, and all attenuations prepared from these tinctures, must bear the term "Fermentation" on all labeling as part of the name of the drug, just before the designation of the homoeopathic strength. If the Class P tinctures are prepared by the Class P-Zimpel method, all attenuations prepared from these tinctures must bear the term "Class P-Zimpel" or "(P-Zimpel)" on all labeling. If the Pekana or Krauss method is used it would be likewise identified. If the lactic acid fermentation process is used, this must be identified with the letters LAF.

18. INCUBATION METHOD

18.1. This process may be preferable in the treatment of botanical raw materials requiring ample time for extraction, and in which a gentle elevation of temperature will create a better breakdown of complex sugar constituents into simpler saccharides, leading to a more complete extraction of medicinal properties.

18.2. Place the finely subdivided raw material into a macerating jar or wide mouthed vessel, and add the calculated quantity of alcohol and purified water, covering, if possible, the whole mass. The vessel should be carefully sealed to prevent evaporation. The mass is warmed to 37 ºC, and maintained at this temperature, with occasional agitation, for one hour. After allowing to cool, the jar or vessel should be placed in a dark room at controlled room temperature, and agitated at appropriate intervals. The time period necessary for the extraction of the medicinal substance is variable; it is safe to allow the further process of maceration to continue from two to four weeks. Then decant the clear liquid and express the mark to obtain the maximum quantity of liquid.

18.3. Filter the expressed liquid to remove any remaining particulate matter such that the filtrate is clear at the time of filtering. Store the tincture in a tightly closed container, made of glass or other inert material, in an appropriate area. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the tincture represents (e.g. 1:10).

18.4. If the tincture prepared by incubation represents any ratio other than one (1) part of medicinal raw material in ten (10) parts of completed tincture, the incubation method tincture must first be diluted to a 1:10 proportion (on a dry weight basis) to prepare the 1X attenuation, or to a 1:100 proportion (on a dry weight basis) to prepare the 1C attenuation.

18.5. Incubation method tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

18.6. All tinctures made with this additional process, and all attenuations prepared from these tinctures, must bear the term "Incubation" on all labeling as part of the name of the drug, just before the designation of the Homeopathic strength.

19. INFUSION METHOD

19.1. This process may be preferable in the treatment of dried botanical raw materials containing large amounts of aromatic principles such as relatively high concentrations of dehydrated aliphatic hydrocarbons.

19.2. Place the finely subdivided dried raw material and the calculated quantity of alcohol into a suitable container. Cover and allow to stand for 15 minutes. After this time, the purified water, previously heated to boiling, is poured over the mass, and, under a reflux condenser, the entire mass is maintained at the boiling point for five (5) minutes. After allowing to cool, the container should be well sealed and placed in a dark room at controlled room temperature, and agitated at appropriate intervals. The time period necessary for the extraction of the medicinal substance is variable; it is safe to allow the further process of maceration to continue from two to four weeks. Then decant the dear liquid and express the mark to obtain the maximum quantity of liquid.

19.3. Filter the expressed liquid to remove any remaining particulate matter such that the filtrate is clear at the time of filtering. Store the tincture in a tightly closed container, made of glass or other inert material, in an appropriate area. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the tincture represents (e.g. 1:10).

19.4. If the tincture prepared by infusion represents any ratio other than one (1) part of medicinal raw material in ten (10) parts of completed tincture, the infusion method tincture must first be diluted to a 1:10 proportion (on a dry weight basis) to prepare the 1X attenuation, or to a 1:100 proportion (on a dry weight basis) to prepare the 1C attenuation.

19.5. Infusion method tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

19.6. All tinctures made with this additional process, and all attenuations prepared from these tinctures, must bear the term "Infusion" on all labeling as part of the name of the drug, just before the designation of the homeopathic strength.

20. CLASS O -- SUCCUSS or Non-Alcoholic Extracts

20.1. In certain cases, as specified in the respective monograph, it is appropriate, to prepare a succus (or non-alcoholic) extract. The final product should be suitably stabilized to prevent chemical degradation and microbial contamination.

20.2. Succuss - Expressed

20.2.1. The freshly gathered plant, or parts thereof, are subdivided and pounded to a pulp. The pulp is then expressed; the expressed liquid is collected. One (1) part of the expressed liquid is mixed with one (1) part of purified water. The mixture is allowed to stand for eight (8) days or more, after which the liquid is decanted and filtered to remove any remaining particulate matter such that the filtrate is clear at the time of filtering.

20.3. Succuss - Tapped

20.3.1. The exudation of the living plant is obtained by puncturing the bark or incising the plant part to be drained. It may be necessary to insert a spout or mechanical drain to prevent resealing of the orifice. The exudate is allowed to thicken. The inspissated juice is then processed as specified in the respective monograph. Filter to remove any remaining particulate matter such that the filtrate is clear at the time of filtering.

20.4. The succus extract may be mixed with alcohol or may be preserved by fermentation. If preserved by fermentation, this must be stated on the label. Store the tincture in a tightly closed container, made of glass or other inert material, in an appropriate area. Label the container with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material, and also indicate the proportion of medicinal raw material that the succus extract represents (e.g. 1:2).

20.5. The drug strength of` the succus extract is specified in the monograph; in general the extract is not a proportion of one (1) part of medicinal raw material in a total of ten (10) parts or one hundred (100) of extract.

20.5.1. For further attenuation, the succus extract should first be diluted to a 1:10 proportion (on a dry weight basis) to prepare the 1X attenuation, or to a 1:100 proportion (on a dry weight basis) to prepare the 1C attenuation. As an example, for a Class O tincture made in the proportion of one (1) part of the expressed liquid mixed with one (1) of purified water:

20.5.2. For Decimal attenuations.

20.5.2.a. To two (2) parts of Class O tincture, add eight (8) parts of diluent. Succuss (see §28). The result is the 1X attenuation. Subsequent attenuations are prepared as per §26.

20.5.3. For Centesimal attenuations.

20.5.3.a. To two (2) parts of Class O tincture, add ninety-eight (98) parts of diluent. Succuss (see §28). The result is the 1C attenuation. Subsequent attenuations are prepared as per §27.

20.6. Except as specified in the respective monograph, the shelf life of Class O tinctures is five (5) years from the manufacturing date. The shelf life or its attendant expiration date shall apply only to the tincture as a finished dosage form, and not to any subsequent attenuation or product prepared from it.

20.7. Class O succus tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

20.8. If the succus tincture is intended for an oral, ophthalmic, topical or other specific dosage form, the appropriate HPUS and/or USP guidelines for the particular dosage forms will apply, i.e., a succus tincture intended for ophthalmic use must comply with HPUS Guidelines for ophthalmic solutions (see §45).

21. CLASS M -- FRESH BOTANICAL RAW MATERIALS 1:2 (50%)

21.1. Class M tinctures are prepared by maceration (see §14) or other methods of preparation, (see §13.1), from fresh botanical raw materials. Class M tinctures are prepared in the ratio of one (1) part of the fresh botanical raw material's moisture content, in two (2) parts of completed solution. To calculate the amount of alcohol needed, use the following equation:

A = (W x M) / 100

A = weight of strong alcohol to be added

W = weight of the fresh botanical raw material

M = loss of plant moisture in %

21.2. The resulting solution (50%) is labeled with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material. For Class M tinctures, the requirements of this section supersede the guideline on calculation of strength in §1.6.

21.3. For Decimal attenuations.

21.3.1. To two (2) parts of Class M tincture, add eight (8) parts of diluent. Succuss (see §28). The result is the 1X attenuation. Subsequent attenuations are prepared as per §26.

21.4. For Centesimal attenuations.

21.4.1. To two (2) parts of Class M tincture, add ninety-eight (98) parts of diluent. Succuss (see §28). The result is the 1C attenuation. Subsequent attenuations are prepared as per §27.

21.5. Class M tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

21.6. All Class M tinctures, and all attenuations prepared from these tinctures, must bear the term "Class M" or "(M)" on all labeling as part of the name of the drug, just before the designation of the homoeopathic strength.

22. CLASS N -- FRESH BOTANICAL RAW MATERIALS 1:3 (33.3%)

22.1. Class N tinctures are prepared by maceration (see §14) or other methods of preparation, (see §13.1), from fresh botanical raw materials. Class N tinctures are prepared in the ratio of one (1) part of the fresh botanical raw material's moisture content, in three (3) parts of completed solution. To calculate the amount of alcohol needed, use the following equation:

A = (2W x M) / 100

A = weight of strong alcohol to be added

W = weight of the fresh botanical raw material

M = loss of plant moisture in %

22.2. The resulting solution (33.3%) is labeled with the sign Ø, indicating the strongest liquid preparation made directly from the medicinal raw material. For Class N tinctures, the requirements of this section supersede the guideline on calculation of strength in §1.6

22.3. For Decimal attenuations.

22.3.1. To three (3) parts of Class N tincture, add seven (7) parts of diluent. Succuss (see §28). The result is the 1X attenuation. Subsequent attenuations are prepared as per §26.

22.4. For Centesimal attenuations.

22.4.1. To three (3) parts of Class N tincture, add ninety-seven (97) parts of diluent. Succuss (see §28) (Hyperlink to Section 26). The result is the 1C attenuation. Subsequent attenuations are prepared as per §27.

22.5. Class N tinctures are subject to retesting after a period of no more than five (5) years from the manufacturing date, unless stability data confirms a different testing period. The retest date shall apply only to the tincture, and not to any subsequent dilution or product prepared from it.

22.6. All Class N tinctures, and all attenuations prepared from these tinctures, must bear the term "Class N" or "(N)" on all labeling as part of the name of the drug, just before the designation of the homoeopathic strength.

23. QUALITY CONTROL OF RAW MATERIALS AND TINCTURES

23.1. Before use, solutions of chemical raw materials and tinctures of botanical and zoological raw materials are subjected to tests and assays as specified in the respective monographs and must follow the guidance of §1.14.

23.2. See also the Standards and Controls Section for testing details and reagent definitions. (*Hyperlink to THE S&C TESTS AND REAGENTS, which is outside this document)*

24. ADJUSTMENT OF A TINCTURE TO A SPECIFIC VALUE OR RANGE AS REQUIRED IN AN INDIVIDUAL MONOGRAPH

24.1. Occasionally, a tincture may require adjustment to meet a monograph specification (dry residue, alkaloid, or other assayed constituent content, bitterness value, etc., but **not** including alcohol content). Such adjustment would be permissible only when the variance is not more than 50% (relative) outside the specification. Adjustment of the content of constituents may be carried out, if necessary, either by adding alcohol (in the concentration specified in the monograph for preparation of the tincture), or by adding an auxiliary tincture of the same homeopathic preparation.

24.2. Determine the identified monograph specification for the tincture.

24.3. For tinctures that require adjustment to a lower value, use either the method in 24.3.1 or 24.3.2.

24.3.1. Calculate the amount of alcohol required (A1) from the following equation:

$A_1 = w\ (N_x - N_0) / N_0$ (kg)

Where

w = weight of tincture in Kg

N_0 = identified monograph specification in percent as required in the individual monograph

N_x = identified monograph specification of the tincture in percent.

24.3.2. Using an auxiliary tincture batch calculate the proportion of Tincture (T_x) and Auxiliary Tincture (T_a) to be mixed together from the following equations:

$T_x = (N_0 - N_a) \times 100$

$T_a = (N_x - N_0) \times 100$

Where

N_a = identified monograph specification of the auxiliary tincture in percent, expressed as a decimal.

N_0 = identified monograph specification in percent, expressed as a decimal, as required in the individual monograph

N_x = identified monograph specification of the tincture in percent, expressed as a decimal.

24.4. For tincture that require adjustment to a higher value of identified monograph specification, use the method in 24.4.1.

24.4.1. Using an auxiliary tincture batch, calculate the proportion of Tincture (T_x) and Auxiliary Tincture (T_a) to be mixed together from the following equations:

$T_x = (N_a - N_0) \times 100$

$T_a = (N_0 - N_x) \times 100$

Where

N_a = identified monograph specification of the auxiliary tincture in percent, expressed as a decimal.

N_0 = identified monograph specification in percent, expressed as a decimal, as required in the individual monograph

N_x = identified monograph specification of the tincture in percent, expressed as a decimal.

24.5. Mix the tincture with the required amount of auxiliary tincture. Allow to stand for not less than 5 days under the same storage conditions used for the tincture. Filter if necessary.

24.6. 'The 'adjustment' must not result in non-conformance with any identified monograph specifications. Test the 'adjusted' tincture to assure that it complies with all the specifications before release for use. The initial expiration date of the 'adjusted' tincture may not be longer than the shortest expiration date of any component used to make the adjustment; subsequent retesting of the 'adjusted' tincture is allowed and may be used to modify the initial expiration date.

25. ATTENUATIONS - NOMENCLATURE / DESIGNATIONS

25.1. The Homœopathic Pharmacopeia Convention of the United States hereby adopts the decimal, centesimal and fifty millesimal systems as the standard scales of attenuation, in either liquid or solid form, by which each successive attenuation or trituration is prepared using $1/10^{th}$, $1/100^{th}$ or $1/50{,}000^{th}$ as much of the preceding attenuation or trituration.

25.2. Homeopathic liquid attenuations are designated according to the method of scale of attenuation and the attenuation method employed. The designations, which must appear on the labels, are shown in the following table:

Designation	Scale	Method of Attenuation
X or D	Decimal (1/10)	Hahnemannian
CH or C	Centesimal (1/100)	Hahnemannian
CK or K	Centesimal (1/100)	Korsakovian
LM	Fifty Millesimal 1/50,000	Hahnemannian

25.2.1. The preferred designation for decimal attenuations is X, which clearly indicates the scale used. All decimal attenuations are prepared according to the Hahnemannian method (see §29).

25.2.2. The preferred designation for Hahnemannian centesimal attenuations is CH, which clearly indicates both the scale used and the method of attenuation. As C is a synonym of CH, it can be only used to designate an attenuation that is prepared according to the Hahnemannian method.

25.2.3. The preferred designation for Korsakovian (see §30) centesimal attenuations is CK, which clearly indicates both the scale used and the method of attenuation.

25.2.4. Either the Hahnemannian or Korsakovian method can be used until the 200th centesimal attenuation; thereafter, the Korsakovian system generally is used.

25.2.5. The designation M does not refer to a scale of potentization (like X or C). It is a short hand symbol (from Roman numerals) for the number 1000. The M designation is used to denote potencies in the Korsakovian scale, for example: 1M means 1000CK, 10M means 10,000CK, 50M means 50,000CK and so on.

25.2.6. The only exception is LM, which is a designation for Fifty Millesimal (see §31) as noted above.

25.3. Centesimal attenuations share "calculated" ratios with even numbered decimal attenuations, and thus might be considered homologous ([1]) [e.g. a 2C and a 4X] because the ratios of starting material in the attenuations can be calculated to be the same. However, they are not equivalent, nor interchangeable, as the number of succussion phases is clearly different, as well as the ratio which must be used exclusively in each production series. A centesimal series of attenuations must be made exclusively with centesimal antecedent attenuations; every step must be made in a 1:100 ratio. Likewise any decimal attenuation must be made exclusively with decimal antecedent attenuations; every step must be made in a 1:10 ratio. Mixing centesimal and decimal ratios in the same attenuation series causes the end resulting product to be adulterated.

25.4. The only exceptions to the rule in §25.3 may be the first prepared centesimal attenuation:

25.4.1. A 1C (centesimal) attenuation may be made from a 1X (decimal) Class A or C attenuation when there is no other possible alternative, (e.g. the use of a Class C Tincture [which is 1:10 in strength].

[1] Homologous: having the same or a similar relation; corresponding, as in relative position or structure; origin: Greek *homooios*- similar to + *-logos* proportional (http://dictionary.reference.com/browse/homologous)

25.4.2. A 2C or 3C (centesimal) attenuation may be made from a 3X or 5X (respective decimal) Class B attenuation when there is no other possible alternative, (e.g. the use of a Class B 3X or 5X that is the first soluble attenuation possible, as identified in the respective monograph).

26. DECIMAL SCALE OF ATTENUATION – DEFINITION

26.1. In the decimal scale, the original quantity of medicinal raw material is divided progressively by ten so that the first decimal attenuation (1X) is prepared using one (1) part of medicinal raw material in a total of ten (10) parts of finished first decimal attenuation. The second decimal attenuation (2X) is prepared using one (1) part of the first decimal attenuation in a total of ten (10) parts of the finished second decimal attenuation. The third decimal attenuation (3X) is prepared using one (1) part of the second decimal attenuation in a total of ten (10) parts of the finished third decimal attenuation. Subsequent decimal attenuations are similarly prepared. In each step, nine (9) parts of the diluent (alcohol, purified water, lactose monohydrate, etc.) is used and each step is taken through the succussion phase (see §28*)*. Most tinctures (exceptions are noted in the respective monographs) are equivalent in medicinal strength to the first decimal attenuation (1/10), designated 1X.

26.2. Put another way, one (1) milliliter (1.0 ml) of tincture, one (1) milliliter (1.0 ml) of 1X solution, or (1) one gram (1.0 g) of 1X trituration contains the equivalent of 0.10 gram of dry, or anhydrous, medicinal raw material.

26.3. And one (1) milliliter (1.0 ml) of 2nd decimal attenuation (2X), or one (1) gram (1.0 g) of 2nd decimal trituration (2X) contains the equivalent of 0.01 gram of the dry, or anhydrous, medicinal raw material.

26.4. Subsequent liquid or solid attenuations are made by serial dilution or trituration using one (1) part of the preceding decimal attenuation with nine (9) parts of the vehicle to make a total of ten (10) parts of subsequent attenuation. These ten (10) parts represent the following proportions of the dry, or anhydrous, medicinal raw material:

$2X = 10^{-2}$ parts

$3X = 10^{-3}$ parts

$4X = 10^{-4}$ parts

$5X = 10^{-5}$ parts

$6X = 10^{-6}$ parts

$7X = 10^{-7}$ parts

$8X = 10^{-8}$ parts

26.5. Where medicinal raw materials are insoluble in the proportion of 1 to 10 and require more solvent, as indicated in the respective monographs, their first solutions shall be prepared in accordance with the respective monographs.

27. CENTESIMAL SCALE OF ATTENUATION - DEFINITION

27.1. In the centesimal scale the original quantity of medicinal raw material is divided progressively by one hundred so that the first centesimal attenuation (1C or 1CK) is prepared using one (1) part of medicinal raw material in a total of one hundred (100) parts of finished first centesimal

attenuation. The second centesimal attenuation (2C or 2CK) is prepared using one (1) part of the first centesimal attenuation in a total of one hundred (100) parts of the finished second centesimal attenuation. The third centesimal attenuation (3C or 3CK) is prepared using one (1) part of the second centesimal attenuation in a total of one hundred (100) parts of the finished third centesimal attenuation. Subsequent centesimal attenuations are similarly prepared. In each step, ninety-nine (99) parts of the diluent (alcohol, purified water, lactose monohydrate, etc.) is used and each step is taken through the succussion phase (see §28).

27.2. Put another way, one (1) milliliter (1.0 ml) of the first centesimal liquid attenuation (1C or 1CK), or one (1) gram (1.0 g) of the first centesimal trituration (1C) contains the equivalent of 0.01 gram of the dry, or anhydrous, medicinal raw material.

27.3. And one (1) milliliter (1.0 ml) of the 2nd centesimal liquid attenuation (2C or 2CK), or one (1) gram (1.0 g) of the 2nd centesimal trituration (2C) contains the equivalent of 0.0001 gram of the dry, or anhydrous, medicinal raw material.

27.4. Subsequent liquid or solid attenuations are made by serial dilution or trituration using one (1) part of the preceding centesimal attenuation with ninety-nine (99) parts of the vehicle to make a total of one hundred (100) parts of subsequent attenuation. These one hundred parts represent the following proportions of the dry, or anhydrous, medicinal raw material:

$$2C \text{ or } 2CK = 10^{-4} \text{ parts}$$

$$3C \text{ or } 3CK = 10^{-6} \text{ parts}$$

$$4C \text{ or } 4\,CK = 10^{-8} \text{ parts}$$

27.5. Note: for the centesimal scale, the 1X solution or tincture is divided by ten (10) to produce the first centesimal attenuation (1C), then by one hundred (100) to produce each succeeding attenuation, 2C, 3C, 4C, etc. (See also §25.3)

28. SUCCUSSION

28.1. Succussion is a vigorous agitation of the liquid during a defined period of time. This operation, along with the immediately preceding step of serial dilution [Decimal Scale Of Attenuation (see §26), or Centesimal Scale Of Attenuation (see §27), together comprise the operation of attenuation [Hahnemannian Attenuations - Multiple Flask Method (see §29) or Korsakovian Attenuations - Single Flask Method (see §30)]. Historically, succussion, or the agitation step of attenuation, has also been called dynamization or potentization.

28.2. The vigorous agitation is obtained by a rapid bi-directional movement of the container, each movement or stroke being abruptly interrupted to create significant turbulence throughout the liquid.

28.3. The container selected for the succussion process should accommodate sufficient liquid space and sufficient void space to achieve significant turbulence throughout the liquid. Common practice is for the void space to be not less than 1/3 of the total volume of the container.

28.4. The number of strokes must be at least ten (10).

28.5. Mechanical devices designed to automate succussion must be calibrated to ensure a high degree of reproducibility between batches. The design of automated succussion equipment must produce turbulence throughout the liquid. Designs that employ bi-directional movement with

abrupt interruptions of movement are commonly used. Other methods may be used that have been shown through adequate means to produce such turbulence. Rotation movements (stirring) alone cannot achieve the degree of turbulence required.

29. HAHNEMANNIAN ATTENUATIONS - MULTIPLE FLASK METHOD OF PREPARATION

29.1. For Decimal Attenuations:

29.1.1. A separate clean, tightly closed vial or container of appropriate capacity is employed for each step.

29.1.2. Put one (1) part of tincture or 1X solution in a vial. Add nine (9) parts of diluent. Succuss (see §28). The result is the 2X attenuation.

29.1.3. Note: If a Class D (see §12.3) or Class E (see §7.2) tincture (representing 1:20 of medicinal raw material) is used, then two (2) parts of tincture is used with eight (8) parts of diluent. See also Class M (see §21), Class N (see §22), Class O (see §20), and Class P (see §17)

29.1.4. In a separate vial or container, place one (1) part of the 2X attenuation. Add nine (9) parts of diluent. Succuss (see §28). The result is the 3X attenuation.

29.1.5. Continue this stepwise attenuation until the desired decimal attenuation is attained, each step utilizing a separate well-cleaned, tightly closed vial or container.

29.2. For Centesimal Attenuations:

29.2.1. A separate clean, tightly closed vial or container of appropriate capacity is employed for each step.

29.2.2. Place one (1) part of tincture or 1X solution in a vial. Add nine (9) parts of diluent. Succuss (see §28). The result is the 1C attenuation (See also §25.3).

29.2.3. Note: If a Class D (see §12.3) or Class E (see §7.2) tincture (representing 1/20 of medicinal raw material) is used, then two (2) parts of tincture is used with eight (8) parts of diluent. See also Class M (see §21), Class N (see §22), Class O (see §20), and Class P (see §17)

29.2.4. In a separate vial or container, place one (1) part of the 1C attenuation. Add ninety-nine (99) parts of diluent. Succuss (see §28). The result is the 2C attenuation.

29.2.5. In a separate vial or container, place one (1) part of the 2C attenuation. Add ninety-nine (99) parts of diluent. Succuss (see §28). The result is the 3C attenuation.

29.2.6. Continue this stepwise attenuation until the desired centesimal attenuation is attained, each step utilizing a separate well-cleaned, tightly closed vial or container.

30. KORSAKOVIAN ATTENUATIONS - SINGLE FLASK METHOD OF PREPARATION

30.1. A single clean, tightly closed vial or container of appropriate capacity is employed for all steps.

30.1.1. Place an accurately measured volume of tincture or 1X solution in the vial or container. Agitate thoroughly. Empty the vial or container, either by draining it upside down or by suction; the emptying process must remove exactly ninety-nine (99) percent of the original volume of

tincture or solution employed, leaving one (1) percent of the original volume in the vial. This residue will be the basis for calculating the volume in the next step.

30.1.2. To the one (1) part of tincture or 1X solution remaining in the vial or container, add nine (9) parts of diluent. Succuss (see §28). The result is the 1CK (first Korsakovian) attenuation.

30.1.3. Empty the vial or container, either by draining it upside down or by suction; the emptying process must remove exactly ninety-nine (99) parts of the total volume of 1CK attenuation, leaving one (1) part of the 1CK attenuation in the vial.

30.1.4. To the one (1) part of 1CK attenuation remaining in the vial or container, add ninety-nine (99) parts of diluent. Succuss (see §28). The result is the 2CK (second Korsakovian) attenuation.

30.1.5. To the one (1) part of 2CK attenuation remaining in the vial or container, add ninety-nine (99) parts of diluent. Succuss (see §28). The result is the 3CK (third Korsakovian) attenuation.

30.1.6. Continue this stepwise attenuation until the desired Korsakovian attenuation is attained, with all steps utilizing the same tightly closed vial or container. For medicinal raw materials that are not soluble in water or alcohol, three successive centesimal triturations in lactose monohydrate are first prepared according to Class F (see §33). Then the trituration is converted to liquid form according to Class H (see §35). The Korsakovian attenuation method may then be utilized with the 4C liquid used in steps 1 and 2 above to prepare the 5CK attenuation.

31. FIFTY MILLESIMAL (LM) SCALE OF ATTENUATION - DEFINITION

31.1. Unlike the decimal and centesimal scales of attenuation, in the Fifty Millesimal Scale of attenuation (corresponding to dilution in the ratio of 1:50,000), the initial attenuation step (1LM) is defined by its method of manufacture (see § *32.1 -> 32.1.4*). (Note: The starting material for the 1LM is a 3C trituration; it is not a change of scale during an attenuation series.) The subsequent attenuation steps are defined by their method of manufacture (see §32).

32. FIFTY MILLESIMAL (LM) METHOD OF MANUFACTURE (See Figure 1 -- Hyperlink to web page outside this text)

32.1. For solid medicinal raw materials, proceed according to the centesimal scale to the 3C trituration (see §33.3). For liquid medicinal raw materials, impregnate the lactose monohydrate in a proportion of one (1) part medicinal raw material to one hundred (100) parts lactose monohydrate, then triturate to produce the 1C trituration; alternatively impregnate the lactose monohydrate using one (1) part tincture or 1X solution to ten (10) parts lactose monohydrate, then triturate to produce the 1C trituration. The 2C and 3C triturations are then prepared according to Class F (see §33.3).

32.1.1. To one (1) part (by weight) of the 3C trituration, add five hundred (500) parts (by volume) of a mixture composed of one (1) part 95% v/v alcohol and four (4) parts water. Dissolve the 3C trituration completely.

32.1.2. To one hundred (100) parts (by volume) of 95% v/v alcohol add one (1) part of the liquid prepared in step 31.1.1. Succuss (see §28). The result is the 1LM attenuation.

32.1.3. To five hundred (500) parts (by weight) of #10 pellets, add one (1) part (by volume) of the 1LM attenuation. Shake to ensure all the pellets are impregnated.

32.1.4. Dissolve one (1) part (by weight) of impregnated pellets from step 32.1.3 in one hundred (100) parts (by volume) of 95% v/v alcohol. Succuss (see §28). The result is the 2LM attenuation.

32.1.5. Repeat steps *32.1.2. to 32.1.4.* until the 30LM attenuation is obtained.

33. CLASS F SOLID ATTENUATIONS: TRITURATIONS -- METHOD

33.1. Attenuations of solid medicinal raw materials are prepared by trituration of the medicinal raw material with lactose monohydrate. In calculating the ratio of raw material to diluent, the guidelines on water of hydration (see §1.7) apply. A mortar and pestle is used for small amounts; a mechanical triturator may be used for large amounts. The trituration process must be continued for a sufficient time period to ensure that a homogenous mass is prepared.

33.2. For Decimal Attenuations:

33.2.1. Prepare by triturating one (1) part of the medicinal raw material with nine (9) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 1X trituration.

33.2.2. One (1) part of the 1X trituration is triturated with nine (9) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 2X trituration.

33.2.3. One (1) part of the 2X trituration is triturated with nine (9) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 3X trituration.

33.2.4. Continue this stepwise trituration process until the desired decimal trituration is attained.

33.3. For Centesimal Attenuations:

33.3.1. Prepare by triturating one (1) part of the medicinal raw material with ninety-nine (99) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 1C trituration. When the starting material is a 1X attenuation (see also §25.3), the 1C may be alternatively prepared by triturating one (1) part of the 1X trituration with nine (9) parts of lactose monohydrate. Triturate for a sufficient time. The resulting product is the 1C trituration.

33.3.2. One (1) part of the 1C trituration is triturated with ninety-nine (99) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 2C trituration.

33.3.3. One (1) part of the 2C trituration is triturated with ninety-nine (99) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 3C trituration.

33.3.4. Continue this stepwise trituration process until the desired centesimal trituration is attained.

33.4. For hand triturations, one possible method to assure homogeneity is to place approximately one (1) part of lactose monohydrate in a mortar, add one (1) part of the raw material, and then cover with approximately one (1) part of lactose monohydrate. The mass should be mixed well to ensure the raw material is homogeneously dispersed in the lactose monohydrate. Add approximately two to three (2 – 3) parts of lactose monohydrate and mix well to ensure homogeneous dispersion. Finally, add sufficient lactose monohydrate to make a total of nine (9) [for centesimal attenuations: ninety-nine (99)] parts of lactose monohydrate and mix well to ensure homogeneous dispersion.

33.5. Triturations may be dispensed in the form of powders or compressed into tablets (see §48). Either of these may be dissolved in or mixed with aqueous solutions.

33.6. Triturations in powder form may be packaged in capsules (see §52) for easy administration.

34. CLASS G INSOLUBLE LIQUID ATTENUATIONS: TRITURATIONS -- METHOD

34.1. Attenuations of insoluble liquid medicinal raw materials are prepared by trituration of the medicinal raw material with lactose monohydrate. In calculating the ratio of raw material to diluent, the guidelines on water of hydration (see §1.7) apply. A mortar and pestle is used for small amounts; a mechanical triturator may be used for large amounts. The trituration process must be continued for a sufficient time period to ensure that a homogenous mass is prepared.

34.2. For Decimal Attenuations:

34.2.1. Prepare by triturating one (1) part of the insoluble liquid raw material with nine (9) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 1X trituration.

34.2.2. One (1) part of the 1X trituration is triturated with nine (9) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 2X trituration.

34.2.3. One (1) part of the 2X trituration is triturated with nine (9) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 3X trituration.

34.2.4. Continue this step wise trituration process until the desired decimal trituration is attained.

34.3. For Centesimal Attenuations:

34.3.1. Prepare by triturating one (1) part of the medicinal raw material with ninety-nine (99) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 1C trituration. When the starting material is a 1X attenuation (see also §25.3), the 1C may be alternatively prepared by triturating one (1) part of the 1X trituration with nine (9) parts of lactose monohydrate. Triturate for a sufficient time. The resulting product is the 1C trituration.

34.3.2. One (1) part of the 1C trituration is triturated with ninety-nine (99) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 2C trituration.

34.3.3. One (1) part of the 2C trituration is triturated with ninety-nine (99) parts of lactose monohydrate. Triturate for a sufficient time. The result is the 3C trituration.

34.3.4. Continue this stepwise trituration process until the desired centesimal trituration is attained.

34.4. For hand triturations, one possible method to assure homogeneity is to place approximately one (1) part of lactose monohydrate in a mortar, add one (1) part of the insoluble liquid raw material, and then cover with approximately one (1) part of lactose monohydrate. The mass should be mixed well to ensure the raw material is homogeneously dispersed in the lactose monohydrate. Add approximately two to three (2 – 3) parts of lactose monohydrate and mix well to ensure homogeneous dispersion. Finally, add sufficient lactose monohydrate to make a total of nine (9) [for centesimal attenuations: ninety-nine (99)] parts of lactose monohydrate and mix well to ensure homogeneous dispersion.

34.5. Triturations may be dispensed in the form of powders or compressed into tablets (see §48). Either of these may be dissolved in or mixed with aqueous solutions.

34.6. Triturations in powder form may be packaged in capsules (see §52) for easy administration.

35. CLASS H CONVERSION OF TRITURATIONS OF INSOLUBLE BASIC SUBSTANCES INTO LIQUID ATTENUATIONS

35.1. Class H conversions of triturations of insoluble medicinal raw material into liquid attenuations are prepared by attenuating one (1) part of the lowest soluble trituration of the medicinal raw material with sufficient diluent to produce the next attenuation. All chemical raw materials that are insoluble or only partially soluble in the vehicles noted in the section on Diluents and Vehicles (see §2) must only be prepared as triturations (see §33 or §34) through two (2) decimal steps below the liquid attenuation (or one (1) centesimal step below the centesimal liquid attenuation that is homologous (see §25.3) to the decimal attenuation) identified in the individual monograph and may then be converted to liquids according to the following Class H procedure(s):

35.2. For Decimal Attenuations:

35.2.1. Prepare by dissolving one (1) part of the 6X trituration, or lowest soluble trituration as specified in the respective monograph, in sufficient purified water to make a total of ten (10) parts. Succuss (see §28). The result is the intermediate attenuation.

35.2.2. To one (1) part of the intermediate attenuation, add nine (9) parts of diluent. Succus. The result is the liquid attenuation identified in the individual monograph.

35.2.3. Note: the intermediate attenuation should be freshly prepared; any excess that is not used **immediately** to prepare the liquid attenuation identified in the individual monograph is to be discarded.

35.2.4. **As an example**, if the liquid attenuation identified in the individual monograph is 8X, then dissolve one (1) part of the 6X trituration in sufficient purified water to make a total of ten (10) parts. Succuss (see §28). The result is the 7X intermediate attenuation. To one (1) part of the 7X intermediate attenuation, add nine (9) parts of diluent. Succus (see §28). The result is the 8X attenuation. Note: the 7X intermediate should be **used immediately to prepare the 8X attenuation**; any excess that is not used **immediately** to prepare the 8X attenuation is to be discarded.

35.2.5. Subsequent attenuations are prepared as specified in §26.

35.3. For Centesimal Attenuations:

35.3.1. Prepare by dissolving one (1) part of the lowest soluble trituration, which is one (1) centesimal step below the centesimal liquid attenuation that is homologous (see §25.3) to the decimal attenuation specified in the respective monograph, in fifty (50) parts of purified water. Add sufficient diluent to make a total of one hundred (100) parts. Succuss (see §28). The result is the centesimal liquid attenuation that is homologous to the decimal attenuation specified in the respective monograph.

35.3.2. **As an example**, if the liquid attenuation identified in the individual monograph is 8X, dissolve one (1) part of the 3C trituration in fifty (50) parts of purified water. Add sufficient diluent to make a total of one hundred (100) parts. Succuss (see §28). The result is the 4C attenuation.

35.3.3. Subsequent attenuations are prepared as specified in §27.

36. ATTENUATIONS FROM MICROSCOPIC FUNGAL RAW MATERIALS

36.1. These attenuations should be prepared under a laminar flow hood using aseptic techniques. All equipment should be sterilized prior to use and disinfected afterwards.

36.1.1. Accurately weigh a portion of a fresh fungi culture, under aseptic conditions. Place it in a sealable autoclavable glass container.

36.1.2. Add to the container, an amount of purified water equal to ninety-nine (99) times the weight of the fresh fungal culture.

36.1.3. Sterilize this raw material mixture at a temperature of at least 121 °C for a minimum of fifteen (15) minutes.

36.1.4. Confirm sterility by sterility testing (see USP <71> Sterility Tests).

36.1.5. Succuss (see §28). The result is the 1C attenuation.

36.1.6. In a separate vial, place one (1) part of the 1C attenuation. Add ninety-nine (99) parts of 70% alcohol. Succuss (see §28). The result is the 2C attenuation.

36.1.7. Filter (0.45 micrometer filter) the 2C attenuation to remove insoluble parts and spores.

36.1.8. Prepare the subsequent attenuations according to §27.

37. CLASS J – ALLERSODES

37.1. Allersodes are homeopathic attenuations of antigens, i.e., substances that, under suitable conditions, can induce the formation of antibodies. Antigens include toxins, ferments, precipitinogens, agglutinogens, opsonogens, lysogens, venoms, agglutinins, complements, opsonins, amboceptors, precipitins, and most native proteins.

37.2. In the preparation of allersodes, the raw material must not be altered and the final product is not adulterated by pathogens or other deleterious substances. Allersodes may not be dispensed in attenuations below 6X (or 3C).

37.3. Fresh, moist, or dry soluble medicinal raw materials are attenuated as per Class A (see §5.3) or Class B (see §5.4).

37.4. Fresh, moist, or dry insoluble medicinal raw materials are attenuated as per Class F (see §33), and may be converted to a liquid attenuation as per Class H (see §35).

38. CLASS K ISODES

38.1. Isodes, sometimes called Detoxodes, are homeopathic attenuations of botanical, zoological, or chemical substances, including drugs, excipients, or binders, that have been ingested or otherwise absorbed by the body and are believed to have produced a disease or disorder that interferes with homeostasis.

38.2. In the preparation of isodes, the raw material must not be altered and the final product is not adulterated by pathogens or other deleterious substances. Isodes may not be dispensed in attenuations below 6X (or 3C).

38.3. Fresh, moist, or dry soluble medicinal raw materials are attenuated as per Class A (see §5.3) or Class B (see §5.4).

38.4. Fresh, moist, or dry insoluble medicinal raw materials are attenuated as per Class F (see §33), and may be converted to a liquid attenuation as per Class H (see §35).

39. COMBINATIONS OF ATTENUATIONS AND / OR TRITURATIONS

39.1. Combinations of attenuation and / or triturations can be prepared according to one of the following methods:

39.1.1. Method A - Simple Mixture, designated (HSM):

39.1.1.a. The Homeopathic Pharmaceutical Ingredients are combined, with no additional diluent or excipient, and mixed until homeogeneous.

39.1.1.b. The labeling must state the quantity or proportion as well as the strength of the homeopathic attenuations or triturations used to make the combination (*Hyperlink to Labeling Guidelines – outside this document*).

39.1.2. Method B - Potentized Mixture, designated (HPM)

39.1.2.a. For decimal attenuations: the Homeopathic Pharmaceutical Ingredients are combined. To one (1) part of the combination, add nine (9) parts of appropriate diluent or excipient. Succuss (see §28) or triturate. Subsequent attenuation and succussion steps may be performed.

39.1.2.b. For centesimal attenuations: the Homeopathic Pharmaceutical Ingredients are combined. To one (1) part of the combination, add ninety-nine (99) parts of appropriate diluent or excipient. Succuss (see §28) or triturate. Subsequent attenuation and succussion steps may be performed.

39.1.2.c. The labeling must state the quantity or proportion as well as the strength of the homeopathic attenuations or triturations used to make the combination. If desired, the number of attenuation steps carried out on the combination itself may be declared (*Hyperlink to Labeling Guidelines – outside this document*).

39.1.3. Method C - Combination Attenuation, designated (HCA)

39.1.3.a. For decimal attenuations: one (1) part each of X number of Homeopathic Pharmaceutical Ingredients are combined. To the mixture, add [ten (10) minus X] parts of appropriate diluent or excipient. Succuss (see §28) or triturate.

39.1.3.b. For centesimal attenuations: one (1) part each of X number of Homeopathic Pharmaceutical Ingredients are combined. To the mixture, add [one hundred (100) minus X] parts of appropriate diluent or excipient. Succuss (see §28) or triturate.

39.1.3.c. The labeling must state the quantity or proportion as well as the strength of the homeopathic attenuations or triturations used to make the combination. If desired, the number of attenuation steps carried out on the combination itself may be declared (*Hyperlink to Labeling Guidelines – outside this document*).

39.1.4. Combinations may be subsequently incorporated into a vehicle appropriate for the intended route of administration, or may be used for medicating other dosage forms.

40. DOSAGE FORMS

40.1. These, like all other conditions of homeopathic production should be governed by simplicity and usefulness to the physician and patient. In other respects, the forms and shapes of vehicles are of no importance and may be varied to suit taste and convenience only. For this purpose pharmacists have employed certain forms made of sucrose and lactose. These may be used simply as medicated powders or as pellets (globules), tablets, triturates, cones, etc. These are

made of a sufficiently small size to serve as a convenient vehicle and dose. See also HPUS Chapter: *Homeopathic Good Manufacturing Practices*; and 21 CFR Subpart I.

40.2. Tinctures, liquid attenuations, and triturations may also be dispensed as suppositories, ointments, cerates, gels, or lotions for topical use. The vehicles used for such topical dosage forms must not interfere with the effectiveness of the preparation or with suitable tests or assays to determine if the product meets its professed standards of identity, strength, quality, and purity. The labeling of all topical dosage forms must state the quantity and strength of the Homeopathic Pharmaceutical Ingredients used in their preparation. This declaration may be made in one of two ways.

40.2.1. Finished Attenuation Nomenclature Format: When the vehicle used for the dosage form is also the entire diluent for the finished attenuation, (i.e. the previous attenuation step is incorporated in the vehicle in a 1:10 ratio, [or 1:100 ratio] and the whole is succussed), the Homeopathic Pharmaceutical Ingredient may be declared as the finished attenuation strength. For example, one (1) part of Arnica 2X is added to nine (9) parts [or one (1) part Arnica 5C is added to ninety-nine (99) parts] of ointment base, and the whole is succussed (see §28), the final product may be labeled as Arnica 3X [or Arnica 6C].

40.2.2. Ingredient Attenuation Nomenclature Format: When the vehicle used for the dosage form is not used as a diluent for a succussion (see §28) step, the quantity of the Homeopathic Pharmaceutical Ingredient is declared. For example, one (1) part of Arnica 2X is added to nine (9) parts of ointment base, and no succussion (see §28) is performed, the final product is labeled “Contains Arnica 2X 10%”, or “Contains 10% Arnica 2X”.

40.3. Some dosage forms have specific requirements for method preparation, labeling considerations, etc.:

Capsules (see §52)

Liquids for Oral or Sublingual Administration (see §49)

Liquids and Semi-Solids for Oromucosal administration (see §46)

Medicated Globules (see §41)

Medicated Powders (see §42)

Medicated Tablets (see §43)

Nasal Solutions (see §44)

Ophthalmic Solutions (see §45)

Otic Solutions (see §47)

Suppositories (see §51)

Tablets (see §48)

Topical Dosage Forms (see §50)

41. MEDICATED GLOBULES

41.1. Medicated Globules are prepared by impregnation of inert globules with one (1) or more liquid attenuations (see §25).

41.1.1. The inert globules, also called pellets or pillules, are made of sucrose, lactose or other appropriate polysaccharides. They are formed into small globular virtually spherical masses of different sizes, designated according to the aggregated diameter of ten (10) globules measured in millimeters. Some common sizes are: Very Small Globules (#10), Small Globules (#20), Regular Globules (#35), and Large Globules (#55).

41.1.2. Globules incorporating lactose will absorb alcoholic attenuations containing a much larger percentage of water than those incorporating sucrose only. All globules must meet the USP tests for sucrose and/or lactose.

41.1.3. During the manufacturing process of globules, measures are taken to ensure that a product is produced that has sufficient stress resistance to be handled without crumbling or breakage.

41.1.4. Globules must meet USP tests for uniformity of mass and disintegration for solid oral dosage forms.

41.1.5. The finished product must meet USP tests for microbiological contamination.

41.1.6. The manufacturing process must be validated.

41.2. Globules may be medicated in one of two ways:

41.2.1. For alcoholic liquid attenuations, the globules are medicated by placing them in an appropriate container and adding the liquid attenuation in the proportion of not less than one (1) percent, and agitating to obtain a uniform impregnation. The medicated globules are dried at a temperature not exceeding 40 ºC. When medicating sucrose globules, dilutions must have a minimum alcohol content of 70%.

41.2.2. For non-alcoholic liquids, the last attenuation step may be prepared in simple sugar syrup using the ratio of one (1) part of penultimate attenuation with nine (9) parts of sugar syrup. Succuss (see §28). Uniformly apply these ten (10) parts of final attenuation to one hundred (100) minus X parts of sucrose globules, where X is the amount of sucrose in the sugar syrup; this will yield one hundred (100) parts of medicated globules. The aqueous fraction of the syrup should be removed at a temperature not exceeding 40 ºC, using constant motion to keep the globules from aggregating before they have dried completely.

41.3. The labeling of globules must state the strength of the liquid attenuation used in their preparation.

41.4. Globules may be packaged in capsules (see §52) for easy administration.

42. MEDICATED POWDERS

42.1. Medicated powders are prepared by adding to one hundred (100) parts of lactose, one (1) part of the desired strength of liquid attenuation (see §23.2), or a mixture of attenuations, mixing the same in a mortar with a spatula, then triturating with a pestle until fully dry.

42.2. One possible method to assure homogeneity is to place approximately 25% of the lactose monohydrate in a mortar, and add one (1) part of the liquid drug attenuation. The mass should be mixed well to ensure the liquid drug attenuation is homogeneously dispersed in the lactose monohydrate. Add approximately 25% more of the lactose monohydrate and mix well to ensure

homogeneous dispersion. Finally, add the balance of the lactose monohydrate and mix well to ensure homogeneous dispersion.

42.3. The labeling of Medicated Powders must state the degree of strength of the liquid attenuation, or each attenuation, used in their preparation.

42.4. Medicated powders may be packaged in capsules (see §52) for easy administration.

43. MEDICATED TABLETS

43.1. Medicated tablets are prepared by impregnation of inert tablets with one or more liquid attenuations (see §25).

43.2. Inert tablets are compressed tablets made of a diluent, such as lactose or sucrose, or a mixture of lactose and sucrose. The process of preparing and compressing the inert tablets is essentially the same as for Compressed Tablets (see §48.3) without the use of a homeopathic attenuation.

43.2.1. Inert tablets are medicated by placing them in an appropriate container, and adding the liquid attenuation in the proportion of two parts liquid attenuation for every 100 parts of inert tablets (2%), and agitating to obtain a uniform impregnation. The medicated tablets are dried at a temperature not exceeding 40ºC.

43.3. The labeling of Medicated Tablets must state the strength of the liquid attenuation, or each attenuation, used in their preparation.

44. NASAL SOLUTIONS

44.1. Nasal solutions are liquids for use as nose drops or as a nose spray.

44.2. Nasal solutions are prepared by the attenuation (see §25) of tinctures or solutions, or by dilution with liquids. Nasal solutions should be isotonic and euhydric. As a rule, sodium chloride is used as the isotonicity agent; other isotonicity agents may be used. For the final attenuation in decimal dilution and centesimal dilution, only purified water or a suitable medium may be used.

44.3. Preservatives, buffers, and stabilizers, if necessary, as well as viscosity enhancers, may be added only after the final attenuation. Nasal solutions may contain suitable inactive ingredients that are safe in the amounts administered, and that do not interfere with the effectiveness of the preparation or with suitable tests or assays to determine if the product meets its professed standards of identity, strength, quality, and purity.

44.4. Nasal solutions in multiple-dose containers must be preserved in a suitable manner.

44.5. The labeling of nasal solutions must state any isotonicity agents, other than sodium chloride, all buffering agents, and all stabilizing agents, as well as any other additives that are used.

44.6. As a rule, nasal solutions should be stored protected from light. Containers must not permit any quality loss by the entry of foreign substances into the preparation or by diffusion of the contents into the container walls. Containers for nasal solutions must ensure an adequate release of contents either in the form of drops or by proper atomization.

44.7. For more information on nasal solutions, consult USP General Notice <10> Preservation, Packaging, Storage, and Labeling, and General Chapters <341> Antimicrobial Agents -

Contents, and <1151> Pharmaceutical Dosage Forms. See also FDA Guidance for Industry: Nasal Spray and Inhalation Solution, Suspension and Spray Drugs.

45. OPHTHALMIC SOLUTIONS

45.1. Ophthalmic solutions are sterile solutions, essentially free from foreign particles, suitably prepared and packaged for insertion into the eye.

45.2. Ophthalmic solutions are prepared by the attenuation (see §25) of tinctures or solutions, or by dilution with liquids. Ophthalmic solutions should be isotonic with lachrymal fluid. As a rule, sodium chloride is used as the isotonicity agent; other isotonicity agents may be used. For the final attenuation in decimal dilution and centesimal dilution, only a suitably prepared isotonic solution, prepared with water for injection, may be used.

45.3. Preservatives, buffers and stabilizers, if necessary, may be added only after the final attenuation. No other additives are permitted.

45.4. Ophthalmic solutions in multiple-dose containers must be preserved in a suitable manner. Ophthalmic solutions for use in surgery must be supplied in single-use containers, contain no preservatives and must be rendered sterile (see §53).

45.5. The labeling of ophthalmic solutions must state any isotonicity agents, other than sodium chloride, all buffering and stabilizing agents that are used. Each container must bear a label stating the preservatives used. Multiple-dose containers shall not exceed 15ml and must include a warning that the preparation should not be used more than thirty (30) days after the seal has been broken.

45.6. Ophthalmic solutions should be stored protected from light. Containers must not permit any quality loss by the entry of foreign substances into the preparation or by diffusion of the contents into the container walls. A dropper should be an integral part of the container.

45.7. For more information on ophthalmic solutions, consult USP General Notice <10> Preservation, Packaging, Storage, and Labeling, and General Chapters <341> Antimicrobial Agents - Contents, and <1151> Pharmaceutical Dosage Forms.

46. LIQUIDS AND SEMI-SOLIDS FOR OROMUCOSAL ADMINISTRATION

46.1. Liquids and semi-solids for local application to the oromucosal tissue are prepared by the attenuation (see §23.2) of tinctures or solutions with appropriate diluents; or by attenuation (see §25) of tinctures or solutions with appropriate diluents and a final step for incorporation into a paste or gel.

46.2. Dosage forms for oromucosal administration may be prepared with an appropriate percentage of alcohol (see §2.1) or in a properly preserved or sterilized non-alcoholic medium (see §53).

46.3. Other inactive ingredients, such as preservatives, buffers, thickeners etc., may be added only after the final attenuation. Dosage forms for oromucosal administration may contain suitable inactive ingredients that are safe in the amounts administered, are compatible with both active and other inactive ingredients present in the preparation and do not interfere with suitable tests or assays to determine if the product meets its professed standards of identity, strength, quality, and purity.

46.4. The labeling of dosage forms for oromucosal administration must state all inactive ingredients,

and must declare the percentage of alcohol, if present, in the final dosage form.

46.5. Dosage forms for oromucosal administration may be packaged in suitable container/closure/applicator systems to allow for ease of local application to the oromucosal tissue; this may include tubes, pressurized or pump aerosol containers, or appropriate applicators.

46.6. Dosage forms for oromucosal administration should be stored protected from light. Containers must not permit any quality loss by the entry of foreign substances into the preparation or by diffusion of the contents into the container walls.

47. Otic SOLUTIONS

47.1. Otic solutions are prepared by the attenuation (see §25) of tinctures or solutions, or by dilution with liquids. Otic solutions should be euhydric. For the final attenuation in decimal dilution and centesimal dilution, only purified water or a suitable medium may be used.

47.2. Preservatives, buffers, and stabilizers, if necessary, as well as viscosity enhancers, may be added only after the final attenuation. Otic solutions may contain suitable inactive ingredients that are safe in the amounts administered, and that do not interfere with the effectiveness of the preparation or with suitable tests or assays to determine if the product meets its professed standards of identity, strength, quality, and purity.

47.3. Otic solutions in multiple-dose containers must be preserved in a suitable manner.

47.4. The labeling of Otic solutions must state all inactive ingredients.

47.5. As a rule, Otic solutions should be stored protected from light. Containers must not permit any quality loss by the entry of foreign substances into the preparation or by diffusion of the contents into the container walls. Containers for Otic solutions must ensure an adequate release of contents.

47.6. For more information on Otic solutions, consult USP General Notice <10> Preservation, Packaging, Storage, and Labeling, and General Chapters <341> Antimicrobial Agents - Contents, and <1151> Pharmaceutical Dosage Forms.

48. TABLETS

48.1. Tablets may be prepared as either Tablet Triturates (Triturated Tablets) (TT) or Compressed Tablets (CT).

48.2. Tablet Triturates (TT): are prepared from moist materials in a triturate mold that gives them the shape of cut sections of a cylinder. Tablet Triturates must be completely and rapidly soluble. Automated methods of producing them are acceptable.

48.2.1. A trituration is prepared according to Class F (see §33). Binders are then added as necessary. (The generally accepted ratio is one (1) part binding solution to fifteen (15) parts of triturate material with variations accepted). Binding solutions are composed of a binder (i.e., gum arabic, microcrystalline cellulose), a preservative if necessary, an inert lubricant, and purified water. The tablets are molded by hand or with appropriate automated equipment. The molded tablets are dried in an area with a relative humidity not exceeding 40%, and at a thermostatically controlled 70º-110ºF. (21º-43ºC).

48.3. Compressed Tablets (CT): are formed by compression of a dry material and have no special coating. They are compressed from powdered or crystalline solids and may contain binders, excipients, lubricants, and disintegrators, as necessary.

48.3.1. A trituration is prepared according to Class F (see §33). In certain cases, plain lactose may be used (i.e. when the compressed tablet is medicated only using a liquid attenuation in the following step). The appropriate liquid attenuation and/or liquid media (purified water, alcohol, etc.) is added to the trituration so the lactose/trituration is thoroughly moistened. Binders are then added as necessary. (The generally accepted ratio is one (1) part binding solution to fifteen (15) parts of triturate material with variations accepted). Binding solutions are composed of a binder (i.e., gum arabic, microcrystalline cellulose), a preservative if necessary, an inert lubricant, and purified water

48.3.2. The moistened material is passed through an appropriate mesh screen to create a moist granulation, and the moist granulation is dried in an area with a relative humidity not exceeding 40%, and at a thermostatically controlled 70º-110ºF. (21º-43ºC).

48.3.3. The dried granulation is passed through an appropriate mesh screen to re-granulate the mass to uniform size. Lubricants are added as necessary. Lubricants such as mineral oil, talc, calcium or magnesium stearate, cornstarch, etc., as approved by the United States Pharmacopœia (USP), may be employed. The dry granulation then is compressed in a rotary tablet machine or similar apparatus to the desired tablet size. Compressed air or vacuum may be employed to remove tablet fines prior to sale or use.

48.4. Other methods of direct compression, omitting moistening, granulation, and re-granulation may be employed providing they show no marked departure or deviation from standard preparation, handling and treatment of Homeopathic triturations.

49. LIQUIDS FOR ORAL OR SUB-LINGUAL ADMINISTRATION

49.1. Liquids for oral or sublingual administration are prepared by the attenuation (see §25) of tinctures or solutions, or by dilution with liquids.

49.2. Liquids for oral or sublingual administration may be prepared with an appropriate percentage of alcohol (see §2.1.3) or in a non-alcoholic medium (see §2.1.4).

49.3. Other inactive ingredients, such as preservatives, buffers, etc., may be added only after the final attenuation. Liquids for oral or sublingual administration may contain suitable inactive ingredients that are safe in the amounts administered, and that do not interfere with the effectiveness of the preparation or with suitable tests or assays to determine if the product meets its professed standards of identity, strength, quality, and purity.

49.4. The labeling of liquids for oral or sublingual administration must state all inactive ingredients, and must declare the percentage of alcohol, if present, in the final dosage form.

49.5. Liquids for oral or sublingual administration should be stored protected from light. Containers must not permit any quality loss by the entry of foreign substances into the preparation or by diffusion of the contents into the container walls.

50. TOPICAL DOSAGE FORMS

50.1. Topical dosage forms, including, but not limited to, ointments, creams, cerates, gels, or lotions are prepared by the incorporation of a tincture or attenuation into a suitable base or by the attenuation (see §25) of tinctures or solutions within a suitable base as the attenuation media.

50.2. The labeling of topical dosage forms must state the quantity and strength of the Homeopathic Pharmaceutical Ingredient(s) used in their preparation, and may be stated in one of three ways as described in §39.

50.3. The vehicle for topical dosage forms must not interfere with the effectiveness of the preparation.

50.4. Other inactive ingredients, such as preservatives, buffers, etc. may be added only after the final attenuation has been prepared. Topical dosage forms may contain suitable inactive ingredients that do not interfere with the effectiveness of the preparation or with suitable tests or assays to determine if the product meets its professed standards of identity, strength, quality, and purity.

50.5. The labeling of topical dosage forms must state all inactive ingredients in the final dosage form.

50.6. Topical dosage forms should be stored protected from light, and should be packaged to minimize potential exposure to microbial contamination.

51. SUPPOSITORY DOSAGE FORMS

51.1. The suppository dosage form is intended for rectal or vaginal administration and is prepared by the incorporation of a tincture or attenuation into a suitable base or by the attenuation (see §25) of tinctures or solutions within a suitable base as the attenuation medium.

51.2. The labeling of suppository dosage forms must state the quantity and strength of the Homeopathic Pharmaceutical Ingredient(s) used in their preparation, and may be stated in one of three ways as described in §39.

51.3. The vehicle for the suppository dosage form must not interfere with the effectiveness of the preparation.

51.4. Other inactive ingredients, such as preservatives, buffers, etc. may be added only after the final attenuation has been prepared. The suppository dosage form may contain suitable inactive ingredients that do not interfere with the effectiveness of the preparation or with suitable tests or assays to determine if the product meets its professed standards of identity, strength, quality, and purity.

51.5. The labeling of the suppository dosage form must state all inactive ingredients in the final dosage form.

51.6. The suppository dosage form should be stored protected from light, and be packaged to prevent microbial contamination.

52. CAPSULES

52.1. Triturations, medicated powders or medicated globules may also be packaged in capsules for easy administration.

52.2. The material used to prepare or mark the capsule should not interact with nor interfere with the effectiveness of the trituration, medicated powder or medicated globules. The labeling of such capsules must state the quantity and attenuation level of the homeopathic trituration, medicated powder or medicated globules in each capsule.

53. METHODS OF STERILIZATION

53.1. Liquid attenuations for parenteral administration shall be prepared in accordance with the appropriate specifications of the current United States Pharmacopœia (USP), must be rendered sterile, and their labeling must state “Rx Only”.

53.2. Any homeopathic drug or dosage form that must be sterile must be rendered sterile using a validated method in compliance with Current Good Homeopathic Manufacturing Practices

(Hyperlink to text outside General Pharmacy) and United States Pharmacopœia (USP) (USP) Sterilization Methods and Sterility Assurance Programs.

53.3. The following USP Sterilization Methods have been determined to be inappropriate for the preparation of homeopathic drug products for the reasons stated:

53.3.1. Steam Sterilization using temperatures greater than 121° C. (documented heat sensitivity of homeopathic preparations).

53.3.2. Dry Heat Sterilization using temperatures greater than 121° C. (documented heat sensitivity of homeopathic preparations).

53.3.3. Gas Sterilization (chemical agent residue contamination of sample).

53.3.4. Ionizing Radiation (possible mutagenic effects of sample).