

**Indications** : Earache, sound in ears, otitis and deafness.

**Mode of**

**Administration** : 500 mg. of this powder should be boiled with 20 ml. of butter. After it is fully cooked, the powder should be strained out. The medicated butter, while slightly warm should be dropped into the ears.

## Appendix-I

(Methods of Purification, Calcination, etc.)

**Bi ṣa (Vatsanābha)**, Bisan dug (a type of *Vatsanābha*)

Aconite

### Method of Purification

*Bi ṣa (vatsanābha)* is a strong poisonous drug. Before using in medicine, it should be purified properly. For this purpose, its root should be washed with warm water to clean external impurities like mud and sand. Then, it should be cut into small pieces of the size of peas and soaked in cow's urine for seven days. The cow's urine should be replaced by fresh urine every day and the container should be kept exposed to sun rays daily during the day time. After seven day's soaking, the drug should be again washed with warm water. The outer bark of these pieces should be removed and dried in the sun.

To ensure its proper processing, the physician should place a small piece of this purified aconite over his tongue. If the drug is absolutely free from toxicity, then there will be no tingling sensation and numbness of the tongue. If there is tingling sensation or numbness in the tongue, then the drug should be processed again in cow's urine as mentioned above.



**Brag'zun****Śilājatu**

(Biumen-a stone-exudate)

**Method of Purification**

There are two methods for *brag'zun* (*śilājatu*), namely 1) *sūrya tāpī* (collected by the heat of sun), and 2) *agni tāpī* (collected by the heat of fire).

For the purification of *śilājatu* by the former method, it is necessary that the sun should be hot and there should be no wind. Five iron trays are necessary in this method. In one of these trays, the powder of *śilājatu* or the stone producing *śilājatu* should be kept. To this, double the quantity of hot water and half the quantity of the decoction of *triphalā* should be added. To prepare the decoction of *triphalā*, the coarse powder of *haritākī*, *bibhitakī* and *āmalakī* should be taken in equal quantities. This should be boiled by adding eight times of water till it is reduced to one-fourth and then filtered. This tray should be kept in sun for three hours. Then this should be stirred well and the water should be filtered out. This water should be kept in the next iron tray and exposed to strong sun rays. Because of the heat of the sun, scum will appear over the water. This scum has to be taken out slowly and collected in the third tray. To this, double the quantity of water should be added and stirred. When the water settles down, the scum will again appear over its surface. This scum should be collected from the surface and transferred to the fourth tray. Similarly, the scum of the fourth tray should be taken out and transferred to the fifth tray. This is the purified form of *śilājatu*. When the process of scum formation is taking place, one should not disturb the trays. This purified *śilājatu* should be exposed to the sun, dried and stored in a glass bottle.

According to the second method, the stone producing *śilājatu* should be boiled with the help of the decoction of

*triphalā* and then filtered. This liquid should be boiled again till it becomes concentrated. Thereafter, this concentrated paste should be exposed to sun rays for drying up the remaining water content. This method of processing the *śilājatu* is generally followed by big drug manufacturers.

**Dhūl chu Pārada (Mercury)**

Dhūl chu or mercury is poisonous to the body cells. It is also adulterated or contaminated with other elements which makes this metal more poisonous for the body. All these poisonings, *doṣas* or defects, both natural and acquired should be removed before its administration. Otherwise it may cause serious diseases.

To remove its impurities or *doṣas*, purification or processing is necessary. There are eighteen different types of *saṃskāras* for mercury. From out of these, the first eight *saṃskāras*, namely (1) *svedana*, (2) *mardana*, (3) *mūrchana*, (4) *utthāpana*, (5) *pātana* [(i) *ūrdhva pātana*, (ii) *adhaḥ pātana*, and (iii) *tiryak pātana*], (6) *bodhana* or *rodhana*, (7) *niyāmana*, and (8) *dīpana* or *sandīpana* are essential to make mercury suitable for use in medicinal recipes. After these eight *saṃskāras*, it has to be processed further which is called *anuvāsana*.

Since mercury is a heavy metal and during the process of *saṃskāra* a portion of this metal gets lost, it should be taken in the beginning in adequate quantity. Depending upon the requirement, small quantity of mercury can be taken, which can be 1 Kg. or 1/2 Kg., but in any case it should not be less than 20 Gms.

**(1) Svedana saṃskāra (Fomentation)**

The term '*svedana*', literally means 'to cause sweating or fomentation.' This is the first of eight *saṃskāras* prescribed for mercury. Generally, following method is followed for this purpose :



A piece of fine and tough cloth should be made four-fold. A layer of *bhūrja patra* (thin layers of the bark of *Betula utilis* D. Don.) or banana-leaf should be placed over this four-fold cloth. The surface of this leaf should be smeared with the paste prepared of *āsuri* (*rājikā*), *saindhava*, *śuṇṭhī*, *marica*, *pippalī*, *ciraka mūla* and *mūlaka* (each should be 1/16th of mercury in quantity) by triturating with water. The thickness of this paste should be  $\frac{3}{4}$ th of an inch. Manually, it should be made to the shape of a conical cup and allowed to dry along with the cloth down below and the leaf in between. After it is dried, mercury should be carefully poured into it and the neck of this cup should be closed by putting the remaining paste of the above mentioned drugs. This *poṭṭali* should be tied to an iron rod placed over the brim of *dolā yantra*. It should be hanged in such a manner that the bottom of this *poṭṭali* does not touch the container and it remains hanging 3" above the bottom of the container. The size of the container used for *dolā yantra* should be in accordance with the quantity of mercury. Then the container of *dolā yantra* should be filled up with *kāñji* (a type of vinegar) upto 2/3rd of its capacity. It should also be ensured that the upper level of mercury inside the *poṭṭali* remains below the level of the *kāñji*. Thereafter, moderate fire should be employed from an oven below. Generally, fuel of cow-dung cakes is preferred because of its constant and penetrating nature of heat. In case of non-availability, wood of *khadira* (*Acacia catechu* Willd), *asana* (*Pterocarpus marsupium* Roxb.) or *sāla* (*Shorea robusta* Gaertn.) may be used for this purpose.

After the boiling, the level of *kāñji* will gradually come down because of evaporation. This level should be maintained by adding more *kāñji* periodically. This cooking should be continued for three days constantly. After this *svedana* or fomentation *saṃskāra*, mercury should be collected carefully from *poṭṭali*. A part of the mercury will remain over the paste and another part will over the leaf

which is placed below the paste. These globules of mercury should be collected by washing the paste either with warm water or warm *kāñji*. It should be done very slowly so that mercury globules, which are in minute form do not pass away from the enamelled tray with the current of the water. The process of washing should be repeated many times to collect the maximum quantity of mercury. Now, this collected mercury has to be subjected to next *saṃskāra*, i.e. *mardana*.

## (2) *Mardana saṃskāra* (Hot trituration)

For *mardana saṃskāra*, first of all mortar (mortar and pestle made of iron are the best for this purpose) should be kept over an oven having strong foundation. Powders of jaggery, rock-salt, house-shoot, ash of wool, brick and kochi (*Brassica nigra* Koch.) - each drug should be 1/16th of mercury in quantity - should be added to the mortar and gradually triturated by adding *kāñji* (a type of vinegar). To this, mercury should be added and triturated for three days (during day time only). During this process, more and more *kāñji* should be added to the mortar because it gets evaporated due to heat below.

After this processing, the mercury should be washed with hot water or hot *kāñji* as was done after *svedana saṃskāra*. The process of washing should be done slowly and gradually so that the mercury globules do not go out along with the strong current of water. Since brick powder is added in the process, it is likely to remain along with mercury because of the heaviness of its particles. Therefore, after washing, mercury should be strained through the help of a tough but porous cloth.

## (3) *Murchana saṃskāra* (Fainting)

The term '*murchana*' means fainting. By this process, the mercury loses its natural physico-chemical properties. For



this *saṃskāra*, *haritākī* (*Terminalia chebula* Rev.), *bibhitakī* (*Terminalia belerica* Roxb.), *āmalakī* (*Emblica officinalis* Gaertn.) and *citraka* (*Plumbago zeylanica* Linn.), each  $\frac{1}{16}$ th in weight of mercury, should be made to powders and placed in the heated mortar and pestle. To this, the juice of *kumārī* (*Aloe barbadensis* Mill.),  $\frac{1}{16}$ th in quantity of mercury, should be added and triturated till a paste is formed. Thereafter, mercury should be added and gradually triturated. For heating, the mortar should be kept over a strongly based oven. The heat should be applied gradually and continuously. The process of trituration should be continued till mercury loses its cohesiveness and breaks into small globules. It may take more than three days for obtaining this state of mercury. To expedite the process, some physicians add the powder of the root of *ankola* (*Alangium salviifolium* Wang.) while triturating.

By this process, mercury becomes free from external excreta, but this *murchana saṃskāra* makes it free from *naisargika doṣas*, i.e. natural poisoning effects inherent in this metal.

#### (4) *Uthāpana saṃskāra* (Revival of the natural physico-chemical properties)

By *murchana saṃskāra*, the mercury loses its cohesiveness and breaks into globules form. It is necessary for further processing so that mercury regains its natural physical characteristics. To regain its original form, the best way is to perform *uthāpana saṃskāra*. This is performed by the process of (1) *svedana* (fomentation), (2) *prakṣālana* (repeated washing), (3) *mardana* (trituration), (4) *āpapa* (exposure to sun), and (5) *pātana* (sublimation, distillation, etc.).

*Svedana* (fomentation) is performed by boiling in *dolā yantra* (as mentioned in *svedana saṃskāra*) containing *kāñjī*.

After this boiling, mercury along with paste, should be repeatedly washed with the help of warm water or warm *kāñjī* in an enamelled tray. Since mercury is heavy, so it will gradually settle down and the paste will come up. This paste should be taken out of the enamelled tray. The process of washing should be done carefully and slowly so that mercury globules do not come out of the enamelled tray along with the strong current of water.

The mercury, thus obtained, should be exposed to sun to dry up.

Finally, mercury should be placed in a *vidyādhara yantra*. This *yantra* has two earthen jars. In the lower jar, the paste of mercury triturated by adding *kāñjī* should be kept. The mouth of this lower jar should be at least 6" in diameter. Over this, the second jar should be placed with its bottom down so that it protrudes inside the mouth of lower jar. The joint between these two jars should be carefully sealed with seven layers of mud smeared cloth. After the seal is dried up, the jars should be kept over fire and the upper jar should be filled with water. As a result of the heat below, the water of the upper jar will gradually become warm. It should be continuously replaced by cold water. It should be ensured that the bottom of the upper jar always remains cool. Because of the heat, mercury will evaporate and get adhered to the bottom of upper jar because of its low temperature. This process should be performed for one day. Thereafter, the seal between these two jars should be carefully broken and mercury should be collected carefully by scraping through a knife. This mercury should be washed and dried.

#### (5) *Pātana saṃskāra* (Sublimation, Distillation, etc.)

*Pātana* is of three types, namely *ūrdhva pātana* (sublimation), *adhaḥ pātana* and *tiryak pātana* (distillation).



### i) Ūrdhva pātana (Sublimation)

To the mercury, recovered from *ūthāpana saṃskāra*, small pieces of copper (1/4th in quantity of mercury) should be added and triturated in mortar and pestle. This should again be triturated for one day by adding the paste of *aṅkola* (*Alangium slaviifolium*), *deva dāru* (*Cedrus deodara*), *pāthā* (*Cissampelos pareira*), *brāhmī* (*Bacopa monnieri*), *citraka* (*Plumbago zeylanica*), *cāṅgerī* (*Oxalis corniculata*), *kākamācī* (*Solanum nigrum*), *maṇḍūkī* (*Centella asiatica*), *gaṇikārikā* (*Clerodendrum phlomidis*), *kumārī* (*Aloe barbadensis*), *jayā* (*Sesbania sesban*), *bhṛṅga rāja* (*Eclipta alba*), *gojihvā* (*Onosma bracteatum*), *śaṅkha puṣpī* (*Evolvulus alsinoides*), *pāṭali* (*Stereospermum suaveolens*), *nirguṇḍī* (*Vitex negundo*), *kāka jaṅghā* (*Peristrophe bicalyculata*), *śatavarī* (*Asparagus racemosus*), *ārdraka* (*Zingiber officinale*), *deva dālī* (*Luffa echinata*), *tila paṇī* (*Gynandropsis pentaphylla*), *nilikā* (*Indigofera tinctoria*), *āragvadha* (*Cassia fistula*) and *kṣīra kāṇḍa* (*Ipomoea paniculata*) - each should be 1/16th in the quantity of mercury. The process of trituration should be performed in a *tapta khalva* (heated mortar and pestle) made of iron. If any of these drugs is not easily available then that drug can be omitted or another drug of this group may be used double in quantity. It should be ensured that the paste is in adequate quantity.

This mixture should be placed at the bottom of *vidyādhara yantra*. It consists of a big earthen pot, the size of which will vary depending upon the quantity of mercury to be processed. The paste should be smeared at the inside bottom of this earthen pot. The mouth of the jar should be covered with an earthen plate. It should be ensured that the size and shape of the plate are exactly fit into the mouth of the earthen pot. The

brims of both, the lower pot and the upper earthen plate should be sealed with the help of seven layers of mud-smeared cloth and dried in the sun. The convex side of the earthen plate should be remained inside the pot and the concave side should be above. Thereafter, this *yantra* should be kept over fire. The cold water should be filled in the plate placed above. This water will gradually become warm because of the heat below. Therefore, it should be replaced by cold water repeatedly to ensure that the bottom of the upper plate always remains cold. This process should be continued for about twelve hours and then the fire should be extinguished. Thus, the mercury placed at the bottom of lower jar will evaporate and it will get condensed at the bottom of the upper jar because of low temperature. When the pot is cooled down, the seal should be carefully broken and mercury adhered to the bottom of earthen plate should be collected into an enamel tray by scrapping out slowly with the help of a knife. While breaking the seal, the pot should be handled very gently so that the sublimed mercury does not fall down and get mixed up with the paste at the bottom of the earthen jar. This mercury should be washed with the help of warm water or warm *kāñji* and dried for further processing.

This *saṃskāra* makes mercury free from some of the residual *doṣas* or defects.

### (ii) Adhaḥ pātana

For *adhaḥ pātana*, *haritākī* (*Terminalia chebula*), *bibhītākī* (*Terminalia belerica*), *āmalākī* (*Embellica officinalis*), *rājikā* (*Brassica nigra*), *śīgru* (*Moringa oleifera*), *sunṭhī* (*Zingiber officinalis*), *pippalī* (*Piper longum*), *marica* (*Piper nigrum*), *lavaṇa* (rock-salt) and *citraka* (*Plumbago zeylanica*) (each should be equal to



that of mercury) should be taken and made to paste. Mercury should be triturated by adding this paste. This paste should again be triturated by adding *kāñji* for one day. Thereafter, this portion should be smeared over the inside bottom of the upper jar of *ḍamaru yantra* and allowed to dry. The upper jar should then be kept inverted over the lower jar and the brims of both the jars should be sealed with seven layers of mud-smeared cloth and dried. Then a pit should be dug out in the earth. The size of the pit should be such that the lower jar could be easily kept inside it. Then heat should be applied over the upper jar. For this purpose, *laghu puṭa* should be employed. Some physicians prefer to give heat with the help of twenty cow-dung cakes. The process of heating should be continued till the fire of the cow-dung cake is extinguished. While cooking, the lower jar should be kept cool by pouring water frequently over the earth around it. After it becomes cool, the *ḍamaru yantra* should be taken out of the earth and the seal should be broken carefully. The mercury, from the lower jar should be collected for *tiryak pātana saṃskāra*.

### (iii) *Tiryak pātana*

This is an important step for the processing of mercury. For *tiryak pātana*, mercury should be mixed with *dhānyābhraka*, *haritākī* (*Terminalia chebula*), *bibhitakī* (*Terminalia belerica*), *āmalakī* (*Emblica officinalis*), *rājikā* (*Brassica nigra*), *śigru* (*Moringa oleifera*), *suñṭhī* (*Zingiber officinale*), *Pippalī* (*Piper longum*), *marica* (*Piper nigrum*), *lavaṇa* (rock-salt) and *citraka* (*plumbago zeylanica*), each should be equal to that of mercury in quantity. It should be triturated by adding small quantities of *kāñji* till mercury loses its own physical form. Then this paste should be kept inside the *tiryak pātana yantra*.

*Tiryak pātana yantra*, in ancient times was prepared with the help of earthen vessels. But for sake of convenience, it is now a days prepared of iron. It consists of a cylindrical iron jar with a narrow mouth to which a bent iron pipe is screwed. The other end of this iron pipe is placed inside a vessel containing water. For sake of convenience, the outer end of this iron pipe is connected with a rubber pipe which opens into a glass jar. This glass jar is kept inside a container having cold water. The cylindrical iron jar is placed over an oven and heat is employed. The joints of the mouth of the cylindrical jar and the iron pipe are sealed with the help of seven layers of mud-smeared cloth and dried before *hand*. Because of the heat employed to the iron jar containing the mercury and the paste of drugs, the mercury will evaporate and pass into the glass bottle kept inside the water pot through the bent iron pipe. This pipe should be wrapped with cloth and cold water should be poured over it to keep it cool. This process can also be performed by any glass distilling apparatus, providing the glass is strong and thermostable.

The strong heat should be employed from an oven to the iron jar containing mercury and the paste of drugs. The heat should be continued till all the mercury comes out of the paste.

Here, special care has to be taken for earth used for sealing the joints of the *yantra*. Because mercury evaporates on 357° centigrade of heat and if the joints of these equipments are not properly sealed then there may be leakage of mercury resulting in considerable loss. Therefore, it should be ensured that the seal is made properly and clay used for this purpose is of appropriate type. It should be resistant to both fire and water. Keeping this point in view, two types of clay are



described, namely *vahni mṛtsnā* (fire clay) and *jāla mṛtsnā* (water clay). Fire clay is prepared with the powder of chalk (talcum), salt and *maṇḍūra* (iron rust). All the three should be taken in equal quantities and well triturated by adding buffalo-milk. This clay is heat resistant, i.e. it does not get broken or burnt even if it comes in direct contact with fire. Water clay is prepared by the decoction of the bark of *babbūla* (*Acacia arabica*). This decoction should be further boiled so that it becomes thicker. To this, fine powder of *maṇḍūra* (iron rust) and the powder of jaggery, both in equal quantities, should be added and well triturated. If the seal made out of this clay is applied and dried, then water even if it is boiling, will not be able to break it. Appropriately, both types of clay should be used in this *tiryak pātana yantra*.

#### (6) *Bodhana or Rodhana saṃskāra* (Revival of potency)

Because of the previous five *saṃskāras*, the mercury becomes absolutely free from its toxicity or defects. This is essential. But during these processes, there will be molecular changes in this metal by which it loses some of its physico-chemical properties inasmuch as its therapeutic potency becomes very mild. It becomes ineffective because its power to get mixed up with other metals, to digest them and to assimilate them becomes mild.

Therefore, it is necessary to restore its original potency. For this purpose, *bodhana* or *rodhana saṃskāra* is performed. The simplest way for reviving is to keep mercury in an earthen jar. To this, a solution of rock-salt (rock-salt mixed with five times of water) should be added. The jar should then be covered, sealed and kept inside a pit dug out in the earth. This will revive the potency of mercury for medicinal usage.

Thereafter, mercury should be placed in an enamel tray and washed with warm *kāñjī* or warm water.

#### (7) *Niyamana saṃskāra* (Regulation of physical properties)

By *rodhana saṃskāra* mercury regains its lost potency. But for future processing, it is necessary that its natural fickleness should be regulated. For this purpose, *tāmbūla* (*Piper betle*), *laṣuna* (*Allium sativum*), *saindhava* (rock-salt), *bhṛṅga rāja* (*Eclipta alba*), *vandhyā karkoṭī* (*Luffa cylindrica*) and *ciñcā* (*Tamarindus indica*), 1/16th in quantity of mercury individually, should be made to paste and spread over the leaves of banana placed over a thick piece of cloth. Then the cloth should be made to a *poṭṭali* and tied with the help of a string. This should be cooked in *dolā yantra* containing *kāñjī*. Thereafter, mercury should be recovered from the paste by washing with the help of warm *kāñjī* or warm water in an enamel tray. This process reduces the fickleness of mercury.

In addition to the arrest of fickleness, it is also necessary to make mercury thermostable. For this purpose, a piece of rock-salt should be made to a crucible. Inside this crucible, mercury, *navasādhara* (Ammonium chloride) and lemon juice should be kept and the mouth should be sealed. It should then be kept inside a pit and covered with 5" of earth. Then fire should be ignited with the help of cow-dung cakes for twenty one days. It is likely that the crucible of rock-salt might not stand the heat for twenty one days. Therefore, it should be replaced with a new one every subsequent days.

At the next stage of this process, mercury should be kept inside a glass jar by adding the powder of rock-salt and sealed. This should be placed for twenty one days inside a pit dug in the earth. Application of heat during this stage is not necessary. By exposing mercury to all these stages, it



becomes resistant to the action of fire, i.e. its evaporation point becomes more than 357° centigrade.

Thus, by this *saṃskāra*, mercury loses its fickleness and becomes thermostable.

#### (8) *Dīpana saṃskāra*

For this *saṃskāra*, *śaurāṣṭrī* (alum), *kāśīsa* (iron sulphate), *taṅkaṇa* (borax), *śigru* (*Moringa oleifera*), *marica* (*Piper nigrum*), *saindhava* (rock-salt) and *rājīkā* (*Brassica nigra*), each taken 1/16th in the quantity of mercury, should be made to a paste. Mercury should be kept over this paste and cooked in *dolā yantra* by adding *kāñjī*. This cooking should be continued for three days continuously.

Thereafter, mercury should be washed with the help of warm *kāñjī* or warm water in an enamel tray. Care should be taken that mercury in small particles does not go out of the enamel tray because of strong current of water or *kāñjī*.

#### *Anuvāsana saṃskāra*

This is not treated as a separate *saṃskāra* for all practical purposes. However, it helps in increasing the potency of mercury. For *anuvāsana*, mercury should be mixed with lime juice, *śuṇṭhī* (*Zingiber officinale*), *saindhava* (rock-salt), *citraka* (*Plumbago zeylanica*) and *hiṅgu* (*asfoetida*) - each taken 1/16th in quantity of mercury. This should be exposed to sun for twenty one days. Thereafter, mercury should be recovered by washing with warm water or warm *kāñjī*.

Excluding *anuvāsana*, remaining eight *saṃskāras* of mercury are essential for medicinal use. Mercury should not be used internally without these eight *saṃskāras*. These *saṃskāras* make mercury potent for curing in a short time, some of the obstinate and otherwise incurable diseases.

#### Gu gul (Gu gul nag po, Gu gul dkar po)

*Guggulu* (Gum-resin from *Commiphora mukul*)

#### Method of Purification

*Gu gul* (*guggulu*) contains a lot of foreign material, namely pieces of wood, leaves and stone. To make it free from these foreign material or impurities, there is a special process of purification. For this purpose, *gu gul* should be boiled with double the quantity of the decoction of *triphalā*. To prepare the decoction of *triphalā*, the coarse powder of *haritākī*, *bibhitakī* and *āmalakī* should be taken in equal quantities and boiled with eight times of water. When it is reduced to one fourth, the decoction should be strained through a cloth or a strainer. To this, *gu gul* should be added and boiled over moderate fire till the drug becomes very soft. Then, this should be strained through a cloth or a strainer while it is warm. Thus, the foreign bodies will remain in the cloth or strainer and the pure *guggulu* will come out. To squeeze out the gum from the cloth or strainer, certain amount of pressure is needed. The *guggulu*, thus obtained, should be dried and kept for medicinal use.

#### Ko byi or Ko byi la

*Kupīlu* (*Nux-vomica*)

#### Method of Purification

*Ko byi* (*kupīlu*) is a poisonous drug. So, it should be specially processed before use as medicine. For this purpose, dried seeds of *kupīlu* should be soaked in cow's milk for twenty four hours and its outer coating should be removed by scraping out through a knife. Then, the seeds should be cut into small pieces and boiled in four times of cow's milk for three days. Each day boiling should be continued for four hours. After finishing the each day's boiling, milk should be thrown away and seeds should be



washed with warm water and dried in sun. Thereafter, the cut pieces of seed-kernels should be fried by adding ten percent of cow's ghee or butter. Then powder should be prepared by grinding and stored in a clean and dry glass bottle for medicinal use.

#### Lcag phyed (Lcags thal)

#### Loha bhasma (Calcined iron)

To prepare the *bhasma* (calcined powder) of iron, first of all thin leaves of iron should be purified according to the method prescribed below and thereafter, *bhasma* should be prepared.

#### Method of Purification

Thin iron-leaves should be heated over the flame of fire and immersed for seven times in each of sesame oil, butter-milk, cow's urine, *kāñjī* (a type of vinegar) and decoction of *kulattha* (*Dolichos biflorus*). After this general method of purification, iron should be processed again according to a special method. For this purpose, 750 gm. of the pulp of *triphalā* (*haritakī*, *bibhitakī* and *āmalakī* - all taken in equal quantities is called *triphalā*) should be made to a coarse powder. To this, four times of water should be added and boiled till it is reduced to one fourth. This decoction should be filtered through a cloth. Then, purified iron leaves should again be heated over fire and immersed into this *triphalā* decoction for seven times. This is the special processing of iron.

To make iron therapeutically more effective, its further processing is necessary. Purified iron chips should be kept inside an earthen jar. To this, sufficient quantity of cow's urine should be added to ensure that all the iron pieces are submerged. This jar should be covered with an iron plate and exposed to sun rays. When the cow's urine gets dried up, more cow's urine should be added. This process should

be continued for a month. Thereafter, these iron chips should be impregnated for a month in each of the decoction of *triphalā* and the juice of *kumārī* (*Aloe barbadensis*). At the end of this processing of three months, iron chips will become very fragile. Then, this should be washed with warm water, dried and made to a powder by triturating in a pestle and mortar. This powder is to be used for *bhasma* (calcination).

#### Method of Mārāṇa (Calcination)

The above mentioned powder of iron should be impregnated and triturated by adding cow's urine for three days. From out of this paste, small cakes should be prepared and kept inside two earthen plates (*śārāva sampuṭa*). The joint of these earthen plates should be sealed by wrapping with seven layers of mud smeared cloth. This container should be coked by giving *gaja puṭa*. For *gaja puṭa*, a pit 22" in depth, length and breadth should be dug out and filled up with cow-dung cakes till half of its capacity. Then, the *śārāva sampuṭa* should be placed in the pit and the remaining portion of the pit should be filled up with more cow-dung cakes and ignited. After it becomes cool of its own, container should be removed from the ash of cow-dung and iron should be taken out carefully. This process should be repeated for three times. Subsequently, it is to be cooked for three times by impregnating and triturating with the decoction of *triphalā*. Seventh, eighth and ninth *puṭas* should be given by impregnating and triturating with the juice of *kumārī*. Next three *puṭas*, i.e. tenth, eleventh and twelfth, should be given after impregnating and triturating with the juice of *punarnavā* (*Boerhaavia diffusa*). The thirteenth *puṭa* should be given by adding 1/12th of purified *hiṅgula* (cinnabar) and triturating with the latex of *arka* (*Calotropis gigantea*). While the first twelve *puṭas* are given by cooking in *gaja puṭa*, for the thirteenth *puṭa*, only half *gaja puṭa*, i.e. the cooking should be performed in a



half size of pit - 11" in depth, length and breadth. The process of cooking prescribed for thirteenth *puṭa* should be repeated twice more. Thus, by cooking for fifteen times, iron will be reduced to *bhasma* (calcined) form, which is used in the preparation of recipes.

#### Ldoṇ ros

#### Manah śilā (Realgar)

#### Method of Purification

*Ldoṇ ros* (*manah śilā*) is a compound of arsenic and sulphur. Its purification is necessary before using it in medicine. For this purpose, *manah śilā* (realgar) should be impregnated and triturated by adding the juice of either the leaf of *agasiya* (*Sesbania grandiflora*) or *śṛṅgavera* (ginger) or *mātuluṅga* (lemon) or *bhr̥ṅga rāḥā* (*Eclipta alba*) for seven days. Thereafter, *manah śilā* should be dried, made to a powder and stored in a clean and dry glass bottle for use in recipes.

#### Ma ru rtse

#### Guñjā

#### (Seeds of *Abrus precatorius*)

#### Method of Purification

For internal use, *ma ru rtse* (*guñjā*) should be purified. Seeds of *guñjā* should be crushed and tied in a piece of cloth in a round bolus form (*poṭṭali*). This should be boiled in *dolā yantra* for three hours. For this, *poṭṭali* should be hanged through a string from a rod or stick placed over a jar. This *poṭṭali* should be hanged in such a way so that no part of the cloth should touch either the sides or the bottom of the container. Then the jar should be filled up with cow's milk upto half of the level of *poṭṭali*. In this way, lower half of the *poṭṭali* remains immersed in the liquid.

This jar should be kept over the fire. As the boiling starts, the level of milk will go down. To maintain the level of the liquid, more milk should be added periodically. In this way, the boiling should be continued for three hours. Thereafter, the container should be removed from the oven, allowed to cool and *poṭṭali* should be taken out. Seeds of *guñjā* should be collected, washed with warm water and dried. Thus, the drug becomes detoxicated and can be used as medicine internally.

#### Mu tig

#### Muktā (Pearl)

#### Method of Purification

To purify *mu tig* (*muktā*), it should be boiled for three hours in a *dolā yantra* containing the juice of *jayanṭī* (*Sesbania sesban*). For this purpose, pearl (*mu tig*) should be tied in a piece of cloth (*poṭṭali*). This *poṭṭali* should be hanged through a string from a stick or rod kept over the jar. It should be placed in such a way that no part of the cloth should touch either the sides or the bottom of the container. Then the jar should be filled up with the juice of *jayanṭī* till it reaches upto half of the level of *poṭṭali*. Thus, the lower half of it will remain immersed in the juice.

This jar should then be placed over the fire. To this, more juice should be added periodically because the level of the juice will go down, as the boiling starts. Alternatively, the *poṭṭali* may be brought gradually downwards so that it always remains immersed in the juice upto half of its level. In this way, boiling should be continued for three hours. Thereafter, the container should be removed from the fire, allowed to cool and the *poṭṭali* should be taken out of the juice. Cloth should be untied, pearl should be washed with warm water and kept exposed to sun rays for drying. By this process, *mu tig* becomes pure.



This purified pearl should be triturated along with rose water in a mortar and pestle till this is reduced to a fine powder form which is used in medicine. Alternatively, the calcined powder of pearl is used in medicine.

#### Mu zi (Mu zi ser po)

#### Gandhaka (Sulphur)

##### Method of Purification

*Mu zi* (*gandhaka*) is used both externally as well as internally either alone or in combination with other drugs. For external use, there is no need of its purification. But because of its intoxicating and poisonous effects, it should never be used internally without purification. For purification, ghee and sulphur powder should be taken in equal quantities. Ghee should be kept in a stainless steel vessel and heated. After the melting of ghee, sulphur powder should be added to it till the latter melts gradually.

In another stainless steel pot, cow's milk should be kept upto 2/3rd of its capacity. A thin and clean cloth should be tied to its brim. The melted sulphur kept in the first pot should be gradually poured into the second pot through the cloth. When this melted sulphur will come in contact with the milk kept inside the pot, it will solidify. Thereafter, this solidified sulphur should be removed from the milk, washed with hot water and dried. The same process should be repeated for three times. Every time milk used earlier should be thrown away and fresh milk should be used. Then the dried sulphur should be made to a fine powder and stored in a clean and dry glass bottle for its future use in medicines. If this process is repeated for one hundred times, then the sulphur will become absolutely clean and free from its characteristic bad odour.

#### Nag mtshur

#### Nāga bhasma (Lead)

Nāga (lead) should be purified first, and thereafter, it should be reduced to *bhasma* form.

##### Method of Purification

Lead should be heated over mild fire and immersed in the juice of sesame oil, butter-milk, cow's urine, *kāñjī* (a type of vinegar) and decoction of *kulattha* (*Dolichos biflorus*), seven times in each.

To make the lead absolutely free from toxicity, a special method of purification should be followed in addition to the above. Lead should be further heated in an iron spoon. When it is melted, turmeric powder (1/4th in quantity to lead) should be added to it. In another pot, juice of the leaves of *sinduvāra* (*Vitex negundo*) should be kept. This pot should be covered with an earthen plate having a hole in the centre. Then the above-mentioned molten lead should be poured into this jar through the hole. This process should be repeated for seven time. In the place of *sinduvāra* juice, lime water can also be used.

##### Method of Mārāṇa (Calcination)

Lead should be melted in an iron pan. To this, the powder of the bark of *āsvattha* (*Ficus religiosa*) should be added in small quantities and rubbed with the help of a strong iron spoon till the whole lead is reduced to ash. The quantity of the powder of *āsvattha* bark should be equal to the lead in weight. This ash of lead should be collected in the centre of the iron pan and covered with another iron plate. Thereafter, it should be heated over strong fire till the iron pan becomes red hot. When it is cooled down of its own, the powder inside the iron pan should be washed with hot water repeatedly till it becomes absolutely free from the ash of *āsvattha* bark. To this lead powder, equal quantity of



*manah śilā* (realgar) should be added and triturated for eight hours by adding the juice of lemon. From out of this paste, cakes should be prepared, dried in the sun and cooked in *laghu puṭa* by keeping inside the *śarāva sampuṭa*. This process of trituration and cooking should be repeated three times to make lead absolutely free from any adverse effect. Thereafter, the powder can be used in recipes.

### *Na physis*

#### *Śukti bhasma* (Sea-shell)

##### Calcination

For preparing *bhasma* (calcined powder) of *śukti* (sea-shell), it should be purified first.

##### Method of Purification

*Śukti* (sea-shell) should be tied in a piece of cloth in a round bolus form (*poṭṭali*). This *poṭṭali* should be hanged through a string from a rod or stick placed over a jar. This should be kept in such a way that no part of the *poṭṭali* should touch either the sides or the bottom of the container. This jar should be filled up with lemon juice till it reaches upto half of the level of the *poṭṭali* so that the lower half of the *poṭṭali* may remain immersed in the lemon juice.

This container (*dolā yantra*) should be placed over an oven and cooked for three hours. The lemon juice should be added to the container periodically to maintain proper level, because as boiling starts the level of liquid will gradually go down. After three hours, the container should be removed from the fire, allowed to cool and the *poṭṭali* should be taken out. Thereafter, the shell should be washed with warm water. Thus, it becomes pure for further medicinal purposes.

#### Method of *Māraṇa* (Calcination)

The purified *śukti* (sea-shell) should be made to small pieces with the help of a hammer. These pieces should be kept inside two earthen plates (*śarāva sampuṭa*). The joint should be sealed by wrapping with seven layers of mud smeared cloth and dried in the sun. This *sampuṭa* should be cooked in *gaja puṭa*. For this type of cooking, a pit 22" in depth, length and breadth should be dug out, half of it filled up with cow-dung cakes and the container should be placed there. Then the remaining portion of pit should be filled up with more cow-dung cakes and ignited. When it becomes cool of its own, *sampuṭa* should be taken out and pieces of sea-shell should be collected from the container. Then the drug should be triturated in a pestle and mortar till it is reduced to a fine powder form. This *śukti bhasma* is used in recipes.

### *Zaṅs thal*

#### *Tāmra bhasma* (Calcined powder of Copper)

For the preparation of *zaṅs thal* (*tāmra bhasma*), first of all, *tāmra* (copper) should be purified and, thereafter, it should be reduced to *bhasma* (calcined powder) form.

##### Method of Purification

Thin leaves of copper should be heated over the flame of fire. These heated leaves should be immersed for seven times in each of sesame oil, butter-milk, cow's urine, *kāñjī* (a type of vinegar) and the decoction of *kulathā* (*Dolichos biflorus*). Thereafter, a paste should be prepared by triturating rock-salt with the milky-latex of *arka* (*Calotropis gigantea*). Copper leaves should be smeared with this paste, heated over fire and immersed into the juice of *nirguṇḍī* (*Vitex negundo*). This process should be repeated for seven times.



### Method of Mārāṇa (Calcination)

For this purpose, mercury, sulphur and thin leaves of copper should be taken in equal quantities. Purified mercury and purified sulphur, both should be made to a fine black powder like collyrium (*kajjali*) by triturating in a pestle and mortar. This *kajjali* should again be triturated with lemon juice. Then the purified copper-leaves should be smeared with this paste and dried by exposure to the sun rays. These copper leaves should be placed inside two earthen plates and the joint should be sealed by wrapping with seven layers of mud smeared cloth. After drying in the sun, these sealed earthen plates (*śarāva sampuṭa*) should be cooked by giving *gaja puṭa*.

For *gaja puṭa*, a pit 22" in depth, length and breadth should be dug out. This pit should be filled up with cow-dung cakes till half of its capacity and *śarāva sampuṭa* (described above) should be placed there. The remaining portion of pit should be filled up with more cow-dung cakes and ignited. After it becomes cold of its own, the ash of cow-dung cakes should be removed and *śarāva sampuṭa* should be taken out. The seal should be broken out carefully and copper-leaves from the earthen plates should be removed. Then half the quantity of sulphur should be added to these leaves and triturated by adding lemon juice. This should be made to small, round and flat cakes, dried by exposing to the sun, placed inside the earthen plates as prescribed before and then again cooked by giving *gaja puṭa*. This process should be repeated once again. Thus, by giving three *puṭas*, copper will be reduced to *bhasma* form, which is black in colour. This can be used in recipe. If not properly processed, it might cause nausea and vomiting. To ensure its safety, this powder is kept inside the rhizome of *sūrāṇa* (*Amorphophallus campanulatus*) and cooked again. The powder, thus recovered, is safe for use in recipes.

## Appendix-II

### (Methods of Preparation of Different Categories of Recipes)

#### POWDERS

For preparing a recipe in powder form, ingredients prescribed in the formula should first of all be cleaned of all impurities, foreign material and sub-standard material and dried properly. Generally, for drying, the ingredients are kept in separate trays and exposed to hot sun in a dust-free place, specially over the roof top or in a specially designed glass chamber. Thereafter, each ingredient should be made to powder separately and sieved through a clean piece of cloth or through a metallic sieve. Different types of ingredients have different fibre-content, and after sieving, a part of the ingredient is rejected. Thus, the net product after sieving will vary depending upon the nature of the ingredient. Therefore, making powders and weighing them separately before mixing is essential.

If asafoetida is to be used in the recipe, then this should first of all be roasted by adding a little ghee or butter and then added to the recipe. Borax should be fried in a hot pan, made to powder and then added to the recipe. When salt, sugar, camphor or musk is to be added to a recipe, it should be done only at the last stage and mixed well.

Generally, powders retain their therapeutic utility for six months. These recipes should be preserved in a clean, dry



and air-tight glass bottle or porcelain jar. It should not be exposed to air or moisture, which reduces its self-life.

## PILLS

Individual ingredients of these recipes, namely vegetable products, animal products, metals including minerals and gems, should first of all be cleaned of external impurities and internal poisonous principles. *Guggulu*, if prescribed as one of the ingredients, should be purified by following the method described in *Appendix-I*. Poisonous drugs should be detoxicated and metals including minerals and gems should be purified and calcined by following the methods prescribed also in *Appendix-I*. Apart from detoxification, these ingredients are to be made absorbable, assimilable and therapeutically more effective by subjecting them to such methods.

If mercury and sulphur are mentioned in the recipe, then after purification, these two ingredients are to be triturated in a pestle and mortar and reduced to a fine powder form like collyrium. Thereafter, other ingredients are to be added to this powder and triturated by adding the prescribed liquid. Generally, in such recipes one or more liquids like juice, decoction or milk are specified. If the liquid is not specified, then water is to be added to the mixture of these powders and triturated well till a fine paste is formed. Fragrant drugs, like musk and camphor should be added at the end and triturated. If in a recipe, several liquids are mentioned, then these are to be added one after the other and triturated. If it is prepared properly, then the paste should not stick to the finger when rolled.

If in such a recipe, sugar or jaggery is described as one of the ingredients, then this should first of all be made to a syrup by boiling with water. To this, powder of the remaining items should be added till a fine paste is formed. From out of this paste, pills of the required size should be

prepared and dried in the sun or shade. If camphor or musk is added to such recipes, then pills are invariably to be dried in the shade and should not be exposed to the sun.

Instead of pills, now a days, these recipes are being prepared in tablet form in Tablet-making-machines. For this purpose, binding material like gum-arabica is added. If *guggulu* is one of the ingredients, then no binding material is needed to add to such recipes.

These pills should be stored in a clean and dry glass bottle and should not be exposed to air or moisture. Pills or tablets prepared of vegetable products retain their therapeutic value for two years. Those containing metals and minerals, like mercury and sulphur retain their therapeutic value for indefinite period. Infact, older ones are therapeutically better provided there is no fungal infection.

## MEDICATED OIL AND MEDICATED BUTTER

For the preparation of medicated oil, generally sesame oil is used. In rare occasions, mustard oil or coconut oil is used. In such cases, the name of the oil is specified in the recipe. If the name of the oil is not specified, then sesame oil should be used. For medicated butter, butter collected from the milk of either cow or female-yak (*'bri mo*) is used in the recipe. The former is lighter for digestion but the later is therapeutically more efficacious. If both these types of butter are not available, then butter collected from buffalo-milk can be used.

## Essential Ingredients

For the preparation of medicated oil or medicated butter, following ingredients are generally used :

- (1) Liquid which includes decoction, juice, milk, butter-milk and meat soup;



- (2) Paste of drugs; and
- (3) Oil or butter or ghee.

### Quantity of Ingredients

Unless otherwise specified, for such recipes, paste of drugs should be one part, fat (oil, butter, etc.) should be four parts and the liquid should be sixteen parts. If no liquid is specified in the recipe, then water (16 parts) should be used. When liquids are four or less than four, then each one of them should be four times of the oil or butter (i.e. sixteen parts). When the liquids are more than four, then each of them should be equal to the quantity of oil or butter (i.e. four parts).

### Method of Preparation

First of all, the paste, liquid and oil or butter are mixed together and boiled. The recipe should be stirred constantly to avoid the paste at the bottom getting charred. If more than one liquid is prescribed in the formula, then these are to be added one after the other. The second liquid should be added only after the first liquid gets evaporated.

After the moisture of the liquid(s) is evaporated, the moisture of the paste will start evaporating. This is the time when the recipe should be stirred more frequently to avoid the paste getting burnt at the bottom of the vessel. Then the paste should be taken in small quantity and rolled between two fingers to examine its moisture content. If while rolling, the paste feels like lac without sticking to the fingers, then the recipe is less cooked. If the paste is harder and when placed over fire, it burns without any cracking noise, then the recipe is moderately cooked. Further boiling the recipe leads to over-cooking. Moderately cooked medicated oil and medicated butter are suitable for therapeutic purposes. Over-cooked oil or butter can be used only for massage. On the other hand, under-cooked oil or butter loses their property quickly and becomes rancid.

When a medicated oil gets properly cooked, a large amount of foam appears at the surface of the oil. On the other hand, when the medicated butter gets correctly cooked, a large quantity of foam which had already appeared over its surface, subsides.

Thereafter, the recipe should be strained out. If salt or any alkali preparation is to be added to the recipe, then it should be added after the oil is strained and mixed well.

It should be ensured that the cooking of medicated oil or medicated butter should be over mild-fire as excessive heat is likely to spoil the recipe. These preparations should be stored in glass or polythene containers. They retain their therapeutic utility for about one and half years.

### DECOCTION

For the preparation of decoctions, generally vegetable products are used. These are cleaned of foreign bodies and substandard specimens, and dried in the sun. The ingredient should then be reduced to a coarse powder form. This powder, depending upon the requirement of the patient, should be taken in adequate quantity, boiled by adding eight times of water and reduced to one-fourth. If the ingredient is very hard, then sixteen times of water should be added and if these are very soft, then four times of water should be added and boiled till one-fourth remains. The decoction should then be strained out through a clean cloth or metallic strainer. The decoction should be preserved in a clean and dry glass bottle.

The coarse powder can be stored and used for the preparation of decoction as and when required. These coarse powders generally retain their potency for one year when kept in an air-tight container. The decoction should, however, be used within 24 hours of its preparation. But if kept in refrigerated condition, the decoction can retain its therapeutic utility for about fifteen days.