Pharmaceutics

In the field of pharmacy, weight is an operation which entails ascertaining the specific weight of the material that will be used in preparing the compound of a recommended prescription or particular dosage of a drug. In this regard, weighing is very critical in achieving the very purpose for which pharmacy is intended to preserve, which is to attain the curative function. Hence, it will only be achievable by using the correct weighing equipment depending on the physical form of the compound to be measured. Thus, liquid volumes will be measured using separate apparatus from solid compounds.

Different weighing and measuring equipments usually have specific margins of error designated to them. Hence, it is the duty of the technician to take into account these aspects when selecting equipment. Hence, depending on the standard and accuracy level desired, proper equipment must be chosen to avoid prospective errors in determining the actual volumes. Additionally, it also important to note that different compounding ingredients belonging to the same physical form may demand unique equipment, for example, the fact that gels are in semisolid form, they need special equipment for accuracy. Finally, the equipment in use must possess the appropriate scale, for example, grams or milligrams, to be used in performing the weighing operation.

Weighing and Measuring Procedures When Compounding Pharmaceutical Products and Sources of Error in Weighing and Measuring Techniques

First, before any weighing and measuring operation begins, the weighing balances must be placed on a flat and non vibrating surface. This will

safeguard the integrity of the contents to be measured. Secondly, in the event the balance requires special balancing, then this must be done using adjustable legs. When this is not done, there are high chances that the margin of error may be bigger. Thirdly, during measurement, the balance should be placed in an area where there is minimum occurrence of air flow. Fourthly, the technician must ensure that he/she chooses the appropriate class of balance to be used in performing the weighing operation, for example, class II or class III.

Fifthly errors may arise from choosing an improper standard and class equipment recommended for weighing a certain compound. This introduces variations in error depending on the class or equipment chosen. Errors may also be introduced by using the wrong procedure for equipment belonging to a particular class, for example, the procedure for a class II balance may differ from that one of a class III balance because each procedure is specifically designed to address the margin or sources of error introduced during the actual weighing and measuring process.

Types of Water Used In Pharmaceutical Products and Why Products Need Different Types of Water in Their Manufacture

The types of water used for the manufacture of pharmaceutical products include non potable water, purified water, water for injection, sterile water for injection, sterile water for inhalation, bacteriostatic water for injection, and sterile water for irrigation. All these types of water are designated with a specific USP configuration apart from non potable water. Choosing the type of water that will be used to perform a specific operation will depend on

intended use, for example, parenteral operations and nonparenteral operations will demand the use of different types of water. The choice of type of water is also determined by the particulate matter recommendations desired for a particular process or the form of the substance to be prepared.

Moreover, the choice of water is determined by the dosage form intended for parenteral use, for example, this may require use of a purified or water of injection. The analytical reagent to be used also plays a major role in determining the type of water, for example, it may require the application of a specific USP assay, which needs to meet certain standards in its preparation. Finally, the type of water may be determined by the active pharmaceutical ingredient to be used in preparing a compound, which may demand a certain level of purification.

Properties of Different Forms of Pharmaceutical Products and How the Requirements of Products Determine the Compounding Techniques Used

Pharmaceutical products may exist in the form of tablets, ccapsules, suspensions, solutions, emulsions, solids, powders, ointments, and creams. First, tablets normally exist in solid and moulded form. Apart from containing specific medicinal substances, they may also contain colorants, sweeteners, flavours, and diluents. Secondly, capsules usually exist in encapsulated form and the outer coating is made from a gelatine shell. They usually exist in powdered form and are composed of fillers, surfactants, antioxidants, and flow enhancers. Normally they vary in size, which is determined by the number of capsules in a specific dose. Thirdly, emulsions normally exist in suspended form. The content of emulsions is exists in a suspended state

consisting of a liquid phase and small particles; however, the two phases remain immiscible throughout. Depending on the product that is being prepared different compounding techniques may be used. For instance, capsules are essentially compounded based on the individual content of the powder form that is to be encased in the gelatine outer case. The compounding of creams and ointments depends on the therapy technique that will be employed during actual use.

The quality and stability of pharmaceutical products is determined by their physical and chemical properties. These aspects are usually established during the actual development of the drug. They determine the manner of utilization and shelf life of the drug in question. Among the factors include the chemical and physical properties of the drug. First, chemical properties refer to the reaction capabilities of the drug with the environment and other substances. During the actual use of a drug, it may be subjected to numerous contacts with other substances or varying environmental conditions such as temperature and humidity. Secondly, physical properties refer to the form in which the product exists. Depending on the form of the drug, this will determine its packaging and form of application, for example, some may require aerosol dispersion. In order to maximize the quality and stability of a drug, there is need to develop a defined system for performing analysis, designing the product, and controlling/regulating the manufacturing process to attain good results. In addition, specific performance attributes should be defined for the drugs.