

The cGMP Final Rule for Dietary Supplements

Identity Verification

GMP Compliance Deadlines

Companies with 20–499 full-time equivalent employees.....June 25, 2009

Companies with fewer than 20 full-time equivalent employees.....June 10, 2010

Starting from this Newsletter on, we will be focusing on the compliance issues related to nutrition supplement cGMP from the standpoints of laboratory testing. For the convenience of discussion, we will separate the topic into three different parts: identity, strength/potency and safety.

Identity Verification

For identity verification, the cGMP rule requires finished product companies to verify the identity of all ingredients in their products through valid methods. The rule requires testing all lots of all active product ingredients, meeting the established specifications for the identity, strength/purity, composition and safety.

To establish identity of a product, one must first set-up specifications for the product. In the specification sheet, the methods for identity tests are defined. The identity test methods may take on one of the following forms:

1. Morphological or visual identification. This method is usually applicable to herbs/botanical parts that show distinct characteristics by visualization or under magnified conditions, such as species identification by an herbalist or by botanist with tools and specimens for identification. This method is not applicable to herbal extracts.
2. FT-IR is a frequently used analytical technique for identification. Each compound has a unique infrared (IR) spectrum. When the IR spectrum of the sample is identical to that of a standard compound, the sample is then identified. However, two major considerations must be taken into consideration with this technique: A) A standard of the compound or a standard of herbal extract (or standard IR spectrum) must be in place as reference. B) The sample and standard must be assay under identical conditions including the same anhydrous forms or the moisture content because water or salt may contribute significantly to the IR spectrum.
3. TLC method is a traditional method that is still widely used for identification testing, because it is a relatively simple method and multiple samples can be analyzed simultaneously. Again this method requires a standard for comparison. Because of its low resolution power, its use is limited. For example, two different species could have similar chemical profiles for major compounds but subtle differences in minor compounds that contribute to different biological activities, based on TLC band pattern, these two species may be identified as one species.
4. HPLC or GC methods are more advanced tools for identification testing. Due to their separation powder being much better than TLC, it is widely used in USP and many laboratories. The drawback with this method is that it is more expensive and sometimes may miss the identification of the same herbal extracts that show only minor differences in the HPLC profile, which may have been due to minor changes in the manufacturing process.
5. LC/MS or GC/MS can also be used, but due to their expense and technical requirements, they have not been widely used yet as common tools for the purpose of the identification/verification in average laboratories.
6. With respect to the specific requirement for 100 percent identity testing of dietary ingredients, FDA recognizes that it may be possible for a manufacturer to demonstrate, through various methods and processes in use over time for its particular operation, that a system of less than 100 percent identity testing would result in no material diminution of assurance of the identity of the dietary ingredient as compared to the assurance provided by 100 percent identity testing. To do this, a manufacturer must petition the agency for such an exemption to 100 percent identity testing and obtains approval from FDA.