Nature’s Sunshine Quality Testing

Quality begins in selection, where only the finest herbs and raw materials are obtained. The company’s global sourcing of raw materials ensures that the highest quality products are chosen from each harvest season. After being harvested, these materials are shipped to the manufacturing facility, where they are subjected to a series of in-depth quality control tests to ensure purity, potency and cleanliness. Nature's Sunshine meticulously tests all of the raw materials we receive. Our QA testing continues throughout the entire production process. In all, we use more than 300 tests and procedures to ensure the quality of the raw materials we use and the finished products we sell.

Once a product has been produced, it undergoes a battery of tests to assure consistency, quality and potency. The finished product is audited by inspectors for bulk weight, liquid volume, bottle count, bottle sealing and legible lot number. Samples are then given to the QA labs so scientists can complete testing according to finished product specifications. After all tests are completed and the product has passed the inspections, Quality Assurance will release the product. The batch record and a sample of the finished product are retained for future reference. If a customer has a question about a product, QA can refer to the retention sample of the lot in question.

Every test we conduct leads to better product quality, and excellence in product quality is what has put our products where they are today--at the top of the industry. You can be assured that with each new product we develop and manufacture, our commitment to excellence will continue. The following represents a few of the important tests we conduct:

Disintegration

Each lot of tablets or capsules produced at NSP must pass the test for disintegration. Tablets and capsules are tested in accordance with the United States Pharmacopoeia. The tablets or capsules are placed in water maintained at 37° C, and the motion of the disintegration apparatus simulates the passage of a tablet or capsule through the body. The time required for each tablet and capsule to break down is recorded, and all tablets and capsules must dissolve within 30 minutes to be accepted by NSP Quality Assurance.

Dissolution Testing

This test mimics the body’s digestive system and shows the amount of product that is available for use by the body over time. We use this equipment to test our time-release products such as T/R Vitamin C, T/R Valerian and T/R St. John’s Wort. The Dissolution System controls critical environmental parameters for the sample being tested, including temperature, stir rate, sampling time and sampling volume. This close control allows for the highest possible accuracy in testing of our time-release products. Collected

samples are analyzed using extremely sensitive analytical instrumentation such as HPLC or UV-Vis analysis. These instruments show the rate at which the compound is released.

Ash testing

We burn a small sample of herb material in a special microwave furnace for one hour at 700° C. This burns away all of the organic (plant) matter. Any ash that remains after the burn is mineral content or dirt, which is subsequently weighed. Every herb has a characteristic mineral content and a corresponding typical ash content. If, in testing, we find an ash content that is significantly higher than the typical ash content, we suspect the presence of dirt or some other foreign inorganic material. Dirt is a common problem, especially with herbs harvested from plant roots. If harvesters do not take the time to completely clean the dirt from the roots, NSP rejects their herbs.

Acid Insoluble testing

The inorganic ash left after ash testing is treated with hydrochloric acid and burned again. Any remaining ash is called acid-insoluble ash (AIA). A high AIA value may indicate that the herb sample is contaminated with metal particles.

High Performance Liquid Chromatography (HPLC)

This extremely sensitive computerized instrumentation allows us to analyze the ingredients of a mixture. The instrument uses advanced analytical techniques to separate, identify and quantify individual components. Vitamins and active constituents in herbs are tested on the HPLC. These components are measured in all finished products to verify that each lot meets the amount claimed on the label. We also use HPLC to examine the purity and potency of raw materials, particularly herbs that have active compounds. For example, the parthenolide content in feverfew and the ephedra content in ma huang must meet specifications before these materials can receive QA approval.

Organoleptic ID testing

This is usually the first step in the identification of herb samples coming into the Quality Assurance testing area. This analysis includes testing with the senses (checking the taste, odor, color and appearance of the raw herb material). Since herbs are natural products, their characteristics may vary. However, they must fall within a specified range.

Microbiological testing

By testing for and counting the bacteria on machinery, equipment and personnel in the production area, we can evaluate the standard hygiene level and the efficiency of our cleaning procedures. By checking the bacteria counts in the production areas, we ensure that our products will not become contaminated

in the manufacturing plant. NSP utilizes two different methods to test for bacteria: swabbing methods and a device called a bactometer, which uses advanced computer technology to test for the presence of bacteria in raw materials, liquids and finished products. The bactometer is the testing machine of choice. It detects the growth of organisms by the change of electronic signals passed through the testing modules containing suspect bacteria. An increase in conductance in the sample indicates growth of organisms, and changes in the electronic signals are used to count the amount of organisms present. Nature's Sunshine was the first company in the industry to utilize this exciting technology. In addition to the tests mentioned below, tests are also conducted for the presence of coliforms, pseudomonas and Staphylococcus aureus bacteria.

Total Bacteria testing

To use the bactometer to determine the number of microbes that might be present, we take a total plate count. We test a sample of raw material and determine the amount of aerobic microbe contamination in the sample. We then compare this count to our stringent allowable spec levels. If any raw material counts are higher than allowable levels, the lot is rejected and returned to the vendor. Finished products are also audited to ensure that they meet NSP quality specifications.

Mold and Yeast testing

We regularly perform yeast and mold counts using the bactometer. Its special modules contain the elements a mold or yeast would need to sustain life if it were present. When the organism grows, it is detected on the bactometer.

E. coli testing

The dangers of Escherichia coli (E. coli) bacteria are well-known. In large enough quantities, these bacteria can be fatal. NSP tests raw materials for the presence of E. coli using specially designed E. coli count plates that contain an indicator that turns the bacteria blue. This allows for visual identification of the bacteria and, of course, rejection of that particular lot of raw material.

Salmonella testing

Salmonella bacteria are responsible for many food poisoning cases. NSP tests for salmonella bacteria in herb raw materials and products using what is called a 1-2 test. This test allows us to obtain results much more quickly than standard culture methods.