

### Industry Update - DNA testing/NY Attorney General

It's been nearly two years since the New York Attorney General made DNA testing a hot button issue in the herbal supplements industry. Since that time several major manufacturers, specifically those targeted by the New York Attorney General, have pledged to incorporate DNA testing into their QA programs. However, fulfilling that pledge in the near future may be difficult as more scientific experts suggest it will be at least several years before DNA testing is truly "fit for purpose".

Currently only one company offers DNA testing services in the dietary supplements industry, AuthenTechnologies, which was acquired by auditing and testing company NSF International in January 2016. We know of one other well-respected testing lab that is working towards offering DNA testing on herbs by developing their reference library and working with industry on appropriateness. While DNA testing has remained a subject under regular discussion, the industry-wide conversation on whether or not it's well enough understood yet to give reliable results heated up significantly last month.

NSF, in marketing their DNA testing, claims to have found adulterants in products tested. The only problem is that DNA testing methods cannot say if the alleged identified adulterant was a trace amount of DNA from a few stray bits of leaf mixed in with the correct botanical or a significant presence—which is a really big difference. When this was pointed out, an article published online by Nutritional Outlook was revised to reflect this problem. The details:

<http://www.nutraingredients-usa.com/Suppliers2/NSF-revises-herbal-review-presentation-clarifies-adulteration> .

<http://www.nutritionaloutlook.com/next-generation-dna-testing-botanicals>

At SupplySide West the following week a presentation on DNA testing by NSF was cancelled at the last minute. A week later the American Herbal Products Association published on its website: *A caution to industry and regulators - 'Incidental DNA fragments' may be misinterpreted using Next Generation Sequencing (NGS)*, authored by Dr. Steven Newmaster, Professor, Botany & Genetics/Genomics at the University of Guelph, Dr. Subramanyam Ragupathy, Senior Scientist, NHP Molecular Diagnostics at the Biodiversity Institute of Ontario, and Dr. Robert Hanner, Chief Technology Officer (CTO) at TRU-ID Ltd, which you can read here: <http://bit.ly/2eintfa>

The current thinking is that much work remains to be done to make DNA testing a legitimate, consistently reliable addition to the range of testing methods the industry depends upon to ensure identity, purity and potency. H&A has used DNA testing a few times for a very specific issue of species differentiation, but given lack of scientific confidence in its more general use, H&A is extremely comfortable staying with the methods we use:

- Species authentication by trained botanists compared against our standards and hand garbling (that is, meticulously removing every stray bit of "foreign" botanical along with any browned plant or excess stem) of every raw material shipment.
- Time-tested analytical laboratory methods to confirm the identity of ground botanicals or liquid ingredients. We work with quality-certified third party laboratories and the New Use Agriculture and Natural Plant Products Department at Rutgers University.
- Third party testing on all of our extracts to screen for heavy metals, aflatoxins, and microbiological activity.