We Are Pleased to Announce a Seminar Presented by:

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Chief Science Officer, American Botanical Council

“Botanical Ingredient Adulteration – How to Fool Commonly Used Analytical Techniques”

Thursday, February 16, 2017 at 9:00 AM
Astellas Conference Room, SLSRC 3410/3430
Refreshments will be served at 8:45 AM

The chemically complex nature of herbs and botanically-derived ingredients calls for unique quality control processes by suppliers, manufacturers, and producers of herbal products. One of the universal regulatory requirements in industrialized nations around the world is the appropriate testing for identity and authenticity of botanical materials that are to be used in consumer products. Nevertheless, there have been numerous recent cases of accidental misidentification of botanical materials due to human error, sometimes resulting from the lack of adequate quality control measures and/or lack of adequate training. In addition, there is evidence of intentional adulteration, also referred to as economically motivated adulteration (EMA), where raw materials are intentionally substituted or diluted with undisclosed lower-quality ingredients for financial gain of the seller. Another concern is the occurrence of extracts “spiked” with various exogenous compounds, including prescription pharmaceutical drugs, to create a false sense of efficacy. This reflects a significant challenge to the global botanical medicine marketplace and, in some cases, consumer safety.

Botanical ingredients for which adulteration has been reported include, e.g., extracts of bilberry (Vaccinium myrtillus) fruit, black cohosh (Actaea racemosa) root and rhizome, cranberry (Vaccinium macrocarpon) fruit, ginkgo (Ginkgo biloba) leaf, ginseng (Panax ginseng) root, grape (Vitis vinifera) seed, saw palmetto (Serenoa repens) fruit, and St. John’s wort (Hypericum perforatum) herb. The analytical techniques discussed include macroscopic, microscopic, chemical, and genetic assays. Since most of the available methods focus on the determination of marker/active compounds, much emphasis is given to the chemical analysis and the lack of specificity of certain analytical methods with regard to determining ingredient identity and quality. Examples include the addition of amaranth dye to bilberry extracts to enhance the UV/Vis absorption at the wavelength used to determine the total anthocyanin contents, or the addition of rutin- or quercetin-rich materials from extraneous sources to comply with the required contents for total flavonoids in ginkgo extracts.

The presentation will give an overview on the problem of botanical ingredient adulteration and a number of examples how fraudulent suppliers or manufacturers attempt to fool standard analytical testing.
Bio: Dr. Stefan Gafner received his degree in pharmacy at the University of Berne, in Berne, Switzerland. After one year as head pharmacist of the Apotheke Lai in Lenzerheide, Switzerland, he entered the graduate program in pharmaceutical sciences — with a focus on phytochemistry — from the University of Lausanne in Switzerland. His Ph.D. thesis consisted in the search for new antibacterial and antifungal natural products from African medicinal plants. He conducted his postdoctoral research on cancer chemopreventive natural products at the University of Illinois – Chicago in the College of Pharmacy’s Department of Medicinal Chemistry and Pharmacognosy.

For more than a decade, Dr. Gafner has served as a director of analytical chemistry in the research and product development department of natural products company Tom’s of Maine, where he developed and validated many methods for the identification and authentication of herbal extracts, and for quality control of OTC consumer products.

He currently serves as Chief Science Officer of the American Botanical Council, an independent, nonprofit research and education organization dedicated to providing accurate and reliable information for consumers, healthcare practitioners, researchers, educators, industry and the media.

Dr. Gafner is author or co-author of over 35 peer-reviewed scientific publications and holds 5 patents. He is a reviewer for many scientific journals including Phytochemistry, Planta Medica, Journal of AOAC International, Journal of Agricultural and Food Chemistry, and the Journal of Natural Products.