Court File No.: T-2030-13

FEDERAL COURT

BETWEEN:

NEIL ALLARD
TANYA BEEMISH
DAVID HEBERT
SHAWN DAVEY

Plaintiffs

and

HER MAJESTY THE QUEEN IN RIGHT OF CANADA

Defendant

AFFIDAVIT OF MAHMOUD ELSOHLY

I, Mahmoud ElSohly, Research Professor, Professor of Pharmaceutics and President of ElSohly Laboratories Inc. of the City of Oxford, in the State of Mississippi, SWEAR THAT:

1. I am a Research Professor at the National Center for Natural Products Research and Professor of Pharmaceutics, at the School of Pharmacy, University of Mississippi. I am also the President and Director of ElSohly Laboratories Inc. in Oxford, Mississippi. As such, I have personal knowledge of the matters hereinafter deposed to by me, except where same are stated to be based on information and belief and where so stated I verily believe them to be true.

2. I have been retained by the Attorney General of Canada in the above proceeding to provide an expert report for the Court. Attached at **Exhibit "A"** is my expert report, dated October 15, 2014.

3. On June 26, 2014, I was provided with a copy of the Code of Conduct for Expert Witnesses. Attached as **Exhibit "B"** is a signed copy of the Certificate Concerning Code of Conduct for Expert Witnesses.

SWORN before me at the City of Oxford, in the State of Mississippi, this 15th day of October, 2014.

Commissioner for taking Affidavits in and for the State of Mississippi

STATE OF MISSISSIPPI NOTARY PUBLIC ID # 99275 MEGAN STROUD Commission Expires June 2, 2015 PANOLA COUNTY

Dr. Mahmoud ElSohly

Testimony of Mahmoud A. ElSohly, Ph.D., BCFE, BCFM

In the case of

Allard et al. v. Her Majesty the Queen in Right of Canada

The issues or matters to be addressed in this report are hereby set in the following questions as outlined in Attachment I, "Instruction Letter for Expert Report":

(1) What procedures are required in order to cultivate marijuana for medical purposes that is safe and of consistent quality? Why are these procedures necessary?

(2) Are the requirements that are placed upon licensed producers under the *Marijuana for Medical Purposes Regulations* consistent with the production of marijuana for medical purposes that is safe and of consistent quality?

(3) What procedures are required in order to prepare non-dried marijuana extracts, assuming the extracts are for medical use? Do these procedures pose any safety concerns? If so, what are they? What is required to address those concerns to ensure the non-dried marijuana extracts are safely prepared?

(4) How do dosage amounts of non-dried marijuana extracts compare with smoked preparations on a gram for gram basis?

Qualifications:

I, Mahmoud A. ElSohly, am a Research Professor at the National Center for Natural Products Research (NCNPR) and Professor of Pharmaceutics, School of Pharmacy, University of Mississippi, University MS 38677, USA. I am also the President and Laboratory Director of ElSohly Laboratories, Incorporated (ELI), a small business analytical and product development laboratory in Oxford, MS 38655, USA. I have a Bachelor's Degree in Pharmacy and Pharmaceutical Chemistry (1966) and a Master's Degree in Pharmacy and Pharmaceutical Sciences (1971) from the University of Cairo, Egypt. I have a Ph.D., in Pharmacy (Pharmacognosy) from the University of Pittsburgh (1975). After graduation I joined the University of Mississippi in the same year, and I have moved through the ranks and was promoted to the Research Professor position in 1984. I have been actively involved in Natural Products Research my entire career and have been involved in marijuana research since 1976. Initially I worked under the direction of Dr. Carlton Turner who was the Director of the Marijuana Project at the University of Mississippi until 1980 when he moved to the White House as President Reagan's Drug Abuse Policy Advisor. I assumed directorship of the project soon after Dr. Turner's departure and have been in charge of the project since. The project is charged with the production and analysis of cannabis products for research activities in the United States under contract with the National Institute on Drug Abuse. This involves cultivation, harvesting, processing, and analysis of different cannabis products under Good Manufacturing Practices (GMP), which requires registration with both the Food and Drug Administration (FDA) and the Drug Enforcement Administration (DEA). For

this activity, I have been involved with the production of cannabis plant material for human use (clinical studies) for over 35 years.

I have published over 270 scientific articles, many of them cannabis related, and authored over 30 patents in areas of drug discovery, formulation work, and production methods.

I am a member of several professional societies including the American Society of Pharmacognosy (ASP); American Pharmaceutical Association (APHA); American Association of Pharmaceutical Scientists (AAPS); Fellow of the American College of Forensic Examiners (ACFE); Fellow of the American Academy of Forensic Sciences (AAFS); Society of Forensic Toxicologists (SOFT); American Chemical Society (ACS); Fellow of the American Institute of Chemists (AIC) and International Cannabinoids Research Society (ICRS). I am also a Board Certified Forensic Examiner (BCFE) and Board Certified in Forensic Medicine (BCFM).

I have received several honorary awards, the most recent of which include The University of Pittsburgh Legacy Laureate recognition in 2011, The University of Mississippi Research and Creative Achievement Award in 2013, The International Cannabinoids Research Society (ICRS) Lifetime Achievement Award (2013), and in 2014 I was named as one of The University of Pittsburgh Medallions for my achievements in my field.

My background and experience, as evidenced in the attached *curriculum vitae* (Attachment II) qualify me to address the issues outlined in the Instruction Letter.

Response to the specific questions:

1A. What procedures are required in order to cultivate marijuana for medical purposes that is (sic) safe and of consistent quality?

Cultivation of marijuana (Cannabis sativa) to be used as a medicinal product is or should be covered under the same regulations or guidelines for the manufacture of "Botanical Drugs" because as a medicinal product marijuana would be used to mitigate, treat, or cure a disease and, therefore, is considered a botanical drug.

As such, medical marijuana should be manufactured under Good Manufacturing Practice (GMP) or Good Production Practices (GPP) with all pertinent quality control/quality assurance procedures in order to guarantee the quality of the final product and the consistency of production from batch to batch as to the chemical composition, absence of microbial contamination and pesticides, as well as acceptable levels of heavy metals, if any.

Good quality assurance in marijuana production is accomplished through a defined set of protocols and written documents related to each product.

The product:

The product to be produced for medicinal use needs to be determined in terms of its chemical composition (i.e., cannabinoids content and ratios of essential cannabinoids) and limits. For example, does the product need to be rich in delta- 9-tetrahydro-

cannabinol (THC), and, if it is, what is needed in the final product and what are the limits that define the product, not only for THC but for other cannabinoids? Does the product need to be rich in cannabidiol (CBD), another important cannabinoid, and, again, the limits for CBD and other cannabinoids, especially THC? Defining the product and its "chemical composition" will influence the selection of the plant material, the genetic material to be used for the production process.

In order to select genetic material with the right chemical profiles and in the absence of genetic stock already in place, one would have to start from seed material that needs to be cultivated on a small scale indoors, bring the plants to a reasonable height under vegetative growing conditions, followed by changing the photoperiod to allow the plants to flower so that male and female plants can be differentiated. Female plants are then selectively moved back into the vegetative stage photoperiod and chemically characterized. Plants with the desired chemical profile (ratio of selected cannabinoids) are then used as mother plants for future production through vegetative propagation. Some of these plants would need to be carried all the way to maturity to arrive at the final chemical profile.

The selection process might need to be repeated in order to arrive at the appropriate genetic material to be used for the production of a specific variety with the desired chemical profile. Once genetic material is selected, it needs to be maintained for future production, either through continually vegetatively propagating these plants or through micro-propagation preservation techniques; both methods are currently in use in my laboratory.

Each product should have at least a certificate of analysis for each lot which should include the test method, acceptable limits, and the results of the analysis. Each analysis may include the concentration of active constituents (e.g., THC, CBD, etc.), microbial counts, heavy metals, and moisture content.

Operations:

A manufacturer's or producer's operations must be properly described and documented. Accurate and complete recordkeeping is a major factor in successful production of quality products, and is required for regulatory compliance. Each regulatory agency has specific requirements for records, and will expect to review all records during a site inspection. Records may be kept as original records, true copies, or as electronic records. The producer must refer to agency requirements for record retention times and acceptable recordkeeping practices.

Standard Operating Procedures:

A manufacturer must establish and follow written procedures for every aspect of the production and distribution processes. Standard Operating Procedures (SOP) must describe in sufficient detail all operations, including manufacturing, packaging and labeling processes; test procedures; equipment operation, cleaning and calibration; and quality control. A record maintenance SOP should include procedures for reviewing and maintaining records, as well as procedures for changing SOPs. An archive of past SOPs must be retained in order to support

procedures used in past production batches. SOPs must be reviewed on a regular basis and that review must be documented.

Production Records:

Production records should include ongoing records and data, such as equipment maintenance and calibration; cleaning of equipment and utensils; preparation of laboratory reagents and standards; personnel records; distribution records; and product complaint files.

Quality Control Operations:

Quality control operations must be described in SOPs. Effective QC is required to ensure the quality of a product, and should include approval or rejection of all processes, specifications, controls, and tests. Deviations from established procedures may be allowed if properly approved and documented. QC personnel have authority to approve deviations and make decisions on disposition of a product should deviations occur. Corrective actions for process or control deviations must be appropriate to ensure the quality of the product.

Personnel:

Personnel must have proper education, training, and experience to perform assigned functions. SOPs are required to describe procedures for qualification of personnel. Records of education, training, and experience must be maintained. Training records should include the date of training, the type of training, and the name of the person performing the training. Personnel involved in the manufacturing processes must follow the written procedures for proper hygienic practices and other precautions necessary to prevent contamination of components, products, or contact surfaces.

Master Production Record:

In order to ensure uniformity from batch to batch, a Master Production Records (MPR) is required for each botanical drug product. Because procedures may vary depending on batch size, the target size of a batch must be pre-determined and included in the MPR. The MPR must identify specifications for each step in the manufacturing process, and establish controls and procedures to ensure that the batch meets specifications of each step as well as the specifications of the final product, batch size, a complete list of components to be used, the amount of each component, and instructions for packaging and labeling. Written instructions to be included in the MPR for each step include sampling procedures, test procedures, and specific actions to verify steps. Special precautions for both product integrity and for worker safety should be included in the MPR. Corrective actions plans to be used when a specification is not met should be included as well.

Batch Production Record:

A Batch Production Record (BPR) must be prepared for each batch of product. The BPR which accurately follows the appropriate MPR serves to document the performance of

each step of a single production batch. The BPR must include a batch (lot) number of the finished product, the identity of equipment and processing areas used in production of the batch, the date and time of the cleaning and maintenance of equipment (or a cross reference to those records), actual results of monitoring operations (e.g. temperatures, pressures, etc.), and actual results of tests or examinations (or cross references to those records). The BPR should accurately document dates and times of production and QC processes, including identification of the person performing a process and the person verifying each. Packing and labeling processes are included as well, in order to properly document those processes. Documentation that the finished product meets specifications must also be included in the BPR.

Cannabis Growing (Cultivation) and Production of Medicinal Marijuana:

Cannabis may be grown either indoors or outdoors. Outdoor cultivation inherently involves fluctuations in light, temperature, water, and nutrients. Practical controls during outdoor cultivation may ensure the quality and integrity of plant materials, such as application of nutrients, field sampling, and harvesting and processing controls. Cultivation indoors, however, enables more rigorous control of growing conditions and can therefore produce more consistent products. Critical controls for indoor growing include light intensity and duration during the vegetative vs flowering stages as well as time spent in each stage, watering and fertilization protocols, temperature, humidity, and carbon dioxide levels.

The physical plant and grounds where plants are cultivated and processed must meet proper sanitary conditions necessary to prevent contamination of plants and materials. Materials and equipment must be properly stored, litter and waste must be removed, and conditions must be maintained to prevent pests as much as practical. Facilities must be maintained so that they do not constitute a source of contamination. Proper drainage, waste treatment and disposal are important considerations in preventing contamination.

Facilities for cultivation, plant processing, or other manufacturing operations must be maintained in a clean and sanitary condition. Cleaning agents or other toxic agents must be carefully used and stored to prevent contamination of products.

The physical plant should be suitable in size, construction, and design for all aspects of botanical drug production. The effectiveness of maintenance and cleaning of production areas are enhanced by a suitable physical plant. Adequate space is required to allow storing and holding of components and products without mix-ups or contamination. Separate areas may be required for certain operations, such as packaging and labeling.

A manufacturer's or producer's commitment to operate its facilities in compliance with applicable environmental laws is an important aspect of a successful production operation. An environmental assessment should be performed to evaluate the production processes in regards to the amounts and types of waste generated, air emissions, and waste water discharges.

Finished Product:

The specifications of a finished product must be adequately described. Specifications for dried plant material may include:

- Appearance: Physical characteristics, such as color, form, and particle size if powdered.
- Phytochemical Profile: Acceptable range of concentrations of various active cannabinoids.
- Presence of Extraneous Materials: Acceptable limits of cannabis seeds if any, stems, etc.
- Moisture Content: Generally expressed as a percent weight/weight.
- Heavy Metals: Acceptable limits of certain metals based on valid conditions for user safety.
- Certificate of Authenticity: Generally, 100% *Cannabis sativa.*
- Pesticides: A statement that no chemical pesticides were used during cultivation may be sufficient, but if a likely source for pesticide contamination is possible, testing for certain pesticides may be required.
- Microbial Contamination: A natural microbial flora is normal on plants, but the absence of certain microorganisms indicative of contamination should be demonstrated by testing (e.g. *Salmonella sp* and *Escherichia coli*).

Testing procedures for the finished product must be properly described and validated. A product must be quarantined prior to release for distribution in order to allow for verification of all specifications and requirements. After thorough review of all aspects of the batch by the QC unit, QC personnel may determine that a batch is in compliance with specifications and is ready to be released. For the purpose of retesting in case of future issues, reserve samples of each batch of the finished product must be retained prior to release of the remainder of the batch. Reserve samples must be held using the same container and storage conditions as the product to be distributed, and usually held for 1 year past the expiration date of the product or 2 years from the date of distribution of the batch.

Product Stability:

Stability testing of a product is required in order to determine appropriate storage conditions and shelf life. Multiple batches of a product should be tested for stability, using the same types of containers used for distributing the product. The attributes of the product to be considered for stability testing should reflect the specifications of the product. Generally, stability of active ingredients is the preferred markers for stability.

Holding and Distribution:

Products must be held under appropriate conditions of temperature, humidity and light so as to not affect the quality of the product. Storage conditions established by stability studies are to be followed. Distribution also must be done under proper conditions to protect the integrity of the product.

Any products returned by users must be held in quarantine for the QC unit to perform a complete review of the circumstances and the condition of the products. The QC unit has the responsibility of determining the disposition of these returned products.

Any product complaint must be investigated by a qualified person to determine if the complaint involves a possible failure of the product to meet specifications. The QC unit must review and approve any complaint investigations. Complete documentation of the complaint and the investigation must be retained.

1B. Why are these procedures necessary?

These procedures are necessary because the produced marijuana is used as a drug, more like a prescription drug that needs to meet regulatory guidelines for drugs to guarantee the quality of the product, its safety, and its consistency from batch to batch. It is important here to note that other prescription drugs such as antibiotics, blood pressure medicine, diabetes medication, anti-inflammatories, etc., are all, without exception, manufactured under GMP procedures and the public, although they have access to these medications, are not allowed and cannot engage in the manufacture of these products. Medicinal marijuana is in the same class and needs to be manufactured under the same controlled conditions and practices.

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2. Are the requirements that are placed upon licensed producers under the Marijuana for Medical Purposes Regulations consistent with the production of marijuana for medical purposes that is safe and of consistent quality?

I have reviewed the contents of the *Marijuana for Medical Purposes Regulations*. Part I (*Licensed Producers*) includes several divisions. While Divisions 1, 2, and 3 speak to *Permitted Activities* and *General Obligations, Licensing, and Security Measures*, respectively, all of which are important items for the qualification of the production facility and its personnel, Division 4 speaks to *Good Production Practices* (otherwise known as Good Manufacturing Practices in the USA). The practices outlined under Division 4 are designed to guarantee the quality of the product. It speaks to microbial and chemical contamination as well as pest control agents, analytical testing, facilities used for production, packaging, labeling, and storage of materials. It also speaks to equipment, sanitation programs, standard operating procedures, a system for recall, quality assurance, and approved methods and procedures for manufacturing. These, along with other provisions of the regulation, are the same as the requirement for the manufacture of drug substances intended for human use.

Therefore, it is my opinion that the requirements that are placed upon licensed producers under the *Marijuana for Medical Purposes Regulations* are consistent with the production of marijuana for medical purposes that is safe and of consistent quality.

3A. ***What procedures are required in order to prepare non-dried marijuana extracts, assuming the extracts are for medical use?***

The procedures required for the preparation of non-dried marijuana extracts for medical use include those required for the starting plant material, from the regulatory and quality

assurance standpoint as well as requirements specific to the extracted product. Given the fact that these are extracts of the plant material, the extraction process also needs to be controlled.

Currently there are two main techniques or methods used in the preparation of cannabis extracts. These are (a) organic solvent extraction, and (b) Supercritical Fluid Extraction (SFE); each method has its advantages and disadvantages and requirements to meet the Good Manufacturing Practice (GMP) guidelines. These requirements include, but are not limited to, establishment of standard operating procedures for the process, master production records, batch production records, specifications for the starting plant material and for the extract, quality control program, validated process for both the extraction and analytical methods used to release the final product, a quality assurance program and methods for assessing the safety of the product (e.g., microbial contamination, solvent residue, heavy metals, etc.). These requirements can only be met by facilities equipped and staffed by qualified personnel and registered with the appropriate regulatory agency that would have oversight over the manufacturing facilities and assure proper procedures to ensure safety of the manufactured product for human use.

3B. Do these procedures pose any safety concerns? If so, what are they?

The organic solvent extraction procedure has two main safety concerns. These are employee exposure to the inhalation of the vapors of the organic solvent used and the hazard of the solvent causing fire, since all of the organic solvents used for extraction are flammable solvents (mostly hydrocarbon based). These two safety issues could be mitigated through the use of facilities that are equipped to address these issues.

The SFE extraction method does not have these concerns as the use of organic solvents method since it uses carbon dioxide (liquid under high pressure) for extraction, but it requires sophisticated and expensive equipment and highly trained personnel to carry out this process.

3C. what is required to address these concerns to ensure the non-dried marijuana extracts are safely prepared?

In order for non-dried marijuana extracts to be safely prepared, several requirements have to be put in place. These include the implementation of Good Manufacturing Practices with its many elements outlined earlier in this section, particularly quality control and quality assurance procedures; facilities that are qualified (from both drug manufacturing and environmental standpoints) and equipped with the proper and qualified instrumentation to perform the extraction process and the analytical work required to release and certify the final product; and personnel who are properly trained to execute the different aspects of the manufacturing process.

4. How do dosage amounts of non-dried marijuana extracts compare with smoked preparations on a gram for gram basis?

When dried marijuana plant material is extracted, by definition the extract will be much more concentrate in terms of the content of the "active constituent(s)". Depending on the variety of cannabis, the extracts represent, on the average, 10% of the weight of the plant material. Some varieties may produce more than 10%, perhaps up to 15%, and it is important to know that the percentage of the extract relative to the weight of the starting material is solvent dependent and that the term "extract" referred to the concentrated extract (that is to say, the residue obtained after evaporation of the extraction solvent). Suffice to say, regardless of the extraction solvent, all the "active" components, particularly the cannabinoids (e.g., THC and CBD) would be fully extracted and, therefore, their concentration in the final product (extract) will be a function of the content of these cannabinoids in the plant material and the amount of the extract relative to that of the starting plant material.

As an example of an analogous product, consider the difference between ground coffee beans vs freeze-dried coffee. Coffee beans are extracted with water followed by freeze drying the coffee water extract to produce the freeze-dried coffee (Nescafe). While one might use one ounce of ground coffee to make one cup of coffee, one only needs a small teaspoon of the freeze-dried coffee to get the same amount of caffeine (the active component in coffee). In other words, the extraction process concentrates the amount of active constituents in the extract relative to the plant material.

Therefore, it follows that the dose of the extracts should be just a fraction of that of the plant material from which it is prepared. Again, on the average, the dose of the extract should be approximately one-tenth that of the plant material.

Signed this the 15th day of October, 2014, at 5 Industrial Park Drive, Oxford, Mississippi 38655.

Mahmoud A. ElSohly, Ph.D., BCFE, BCFM

ATTACHMENT I

Instruction Letter for Expert Report

ATTACHMENT II

Curriculum Vitae—Mahmoud A. ElSohly

ATTACHMENT I

Instruction Letter for Expert Report

900-840 Howe Street
Vancouver, British Columbia
V6Z 2S9

Telephone: 604-666-4031
Facsimile: 604-666-1284
Email: Robert.danay@justice.gc.ca

June 26, 2014

By Email to: melsohly@olemiss.edu

Mahmoud A. ElSohly, Ph.D., BCFE, BCFM
President
ElSohly Laboratories, Incorporated (ELI)
5 Industrial Park Drive
Oxford, MS 38655
Tel (662) 236-2609
Fax (662) 234-0253

Dear Dr. ElSohly:

Re: ***Allard et al. v. Her Majesty the Queen in Right of Canada***
Instruction Letter for Expert Report

Thank you for agreeing to provide the Attorney General of Canada ("AGC") with an expert report in the matter of *Allard et al. v. Her Majesty the Queen in Right of Canada*. As discussed, this Federal Court litigation involves a constitutional challenge to the *Marihuana for Medical Purposes Regulations* (the "MMPR").

Background Information

The plaintiffs in this litigation, all of whom are medical marihuana users, are challenging the constitutionality of the MMPR on the basis that they cause several unjustified violations of their rights to liberty and security of the person under the Canadian *Charter of Rights and Freedoms*.

The plaintiffs' constitutional challenge in *Allard* focuses on four aspects of the MMPR that differ from the old medical marihuana regime: (1) the elimination of personal cultivation of marihuana in favour of requiring approved individuals to purchase from licensed producers; (2) the restriction that licensed producers may not cultivate marihuana in dwelling places or outdoor areas; (3) the limit on possession of marihuana to either 150g or 30 times the amount prescribed for daily consumption by the individual's medical practitioner, whichever is less; and (4) the failure of the MMPR to permit the production and possession of non-dried marihuana such as cannabis oils, salves, tinctures and edibles.

The plaintiffs have obtained an injunction from the Court that permits them to continue personal production of medical marihuana until the constitutionality of the MMPR is decided by the Court.

The AGC is the defendant and it is the AGC's position that the current medical marihuana regime is constitutionally sound, a position that will be defended by legal counsel

Facts and Assumptions

The facts alleged by the plaintiffs are outlined in the Amended Notice of Civil Claim which is enclosed.

Questions for Your Expert Report

Please address the following matters in your expert report:

(1) What procedures are required in order to cultivate marijuana for medical purposes that is safe and of consistent quality? Why are these procedures necessary?

(2) Are the requirements that are placed upon licensed producers under the *Marijuana for Medical Purposes Regulations* consistent with the production of marijuana for medical purposes that is safe and of consistent quality?

(3) What procedures are required in order to prepare non-dried marijuana extracts, assuming the extracts are for medical use? Do these procedures pose any safety concerns? If so, what are they? What is required to address the those (sic) concerns to ensure the non-dried marijuana extracts are safely prepared?

(4) How do dosage amounts of non-dried marijuana extracts compare with smoked preparations on a gram for gram basis?

Format of Your Expert Report

Your report must be prepared in accordance with the Federal Courts Rules. As such, we ask that you do the following in the body of your report:

1. Set out the issues to be addressed in the report;
2. Describe your qualifications on the issues to be addressed;
3. Attach your current curriculum vitae as a schedule to the report;
4. Attach this letter of instruction as a schedule to the report;
5. Provide a summary of your opinions on the issues addressed in the report;
6. Set out the reasons for each opinion that is expressed in the report;
7. Attach any publications or other materials specifically relied on in support of the opinions;
8. If applicable, provide a summary of the methodology used in the report;
9. Set out any caveats or qualifications necessary to render the report complete and accurate, including those relating to any insufficiency of data or research and an indication of any matters that fall outside of your field of expertise; and,
10. Particulars of any aspect of your relationship with a party to the proceeding or the subject matter of your report that might affect your duty to the Court.

Please number each paragraph of your report as this will aid us in referring to your report in Court.

Please sign and date your report.

Duty to the Court

As an expert witness, you have a duty to the Court which is set out in the attached Code of Conduct for Expert Witnesses. Please carefully review this Code of Conduct and, after doing so, sign the attached Certificate and send it back to us.

Due Dates and Procedural Matters

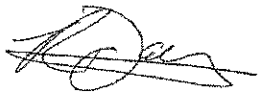
We are required to file our expert reports on or before November 1, 2014. The trial has been set for three weeks commencing February 23, 2015. You may be required to attend the trial for cross-examination and, if so, we will attempt to accommodate your schedule to the extent possible.

Please keep all correspondence pertaining to this assignment in a separate "Expert Witness Report" folder.

We look forward to receiving a draft of your report the **first week of September, 2013**.

Please do not hesitate to contact me by telephone at 604-666-4031 if you require further information or have questions regarding the foregoing.

Yours truly,



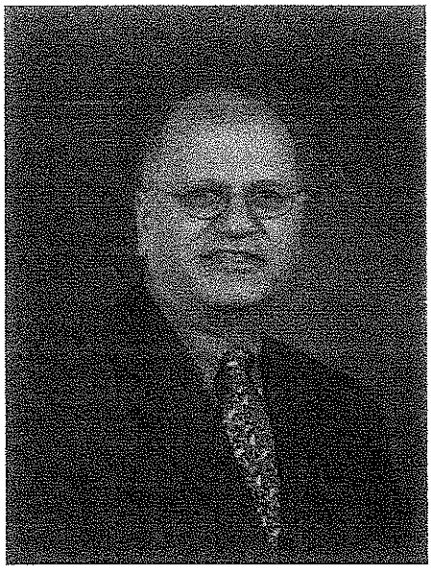
Robert Danay
Counsel

Enclosures: Certificate for Expert Witnesses; Code of Conduct for Expert Witnesses; Amended Notice of Civil Claim

ATTACHMENT II

Curriculum Vitae

Mahmoud A. ElSohly, Ph.D.



MAHMOUD AHMED ELSOHLY **10/14**

ADDRESS: ElSohly Laboratories, Incorporated
5 Industrial Park Drive
Oxford, MS 38655
TEL: 662-236-2609
FAX: 662-234-0253
Email: elsohly@elsohly.com
Web page: www.elsohly.com

CITIZENSHIP: Naturalized citizen of the United States of America

BIRTH DATE AND PLACE: December 31, 1945; Egypt

CHILDREN: Four (Mona, Shahira, Kareem, Adel)

MILITARY SERVICE: Egyptian Forces (Medical Services): Date of Enlistment: September, 1970; Date of Discharge: August, 1972
Position Occupied: Pharmacist; Honorable Discharge

CERTIFICATION: American College of Forensic Examiners—BCFE
(Board Certified Forensic Examiner)
American Board of Forensic Medicine—BCFM
(Board Certification in Forensic Medicine)

EDUCATION: 1975: Ph.D. in Pharmacy (Pharmacognosy), School of Pharmacy, University of Pittsburgh, Pittsburgh, PA 15261

1971: M.Sc. in Pharmaceutical Sciences (Pharmacognosy), Faculty of Pharmacy, Cairo University, Cairo, Egypt

1966: B.Sc. in Pharmacy and Pharmaceutical Chemistry, Faculty of Pharmacy, Cairo University, Cairo, Egypt

PROFESSIONAL POSITIONS:

President and Laboratory Director, Phytochemical Services, Incorporated (PSI), Oxford, MS 2008-Present.

President and Laboratory Director, ElSohly Laboratories, Incorporated (ELI), Oxford, MS, June, 1985 – Present

Research Professor, Research Institute of Pharmaceutical Sciences, and Professor of Pharmaceutics, School of Pharmacy, University of Mississippi, University, MS 38677, July, 1984 – Present

Coordinator, Drug Abuse Program Area, Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, MS, 1988 – 1995

Assistant Director of Physical Sciences Research, Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, MS, July, 1979 - July, 1988

Research Associate Professor, Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, MS 38677, July, 1982 - March, 1984

Research Assistant Professor, Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, MS 38677, July, 1978 - June, 1982

Research Associate, Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, MS, November, 1975 - June, 1978

Acting Assistant Director of Physical Sciences, Research, Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, MS, August, 1976 - June, 1979

Postdoctoral Research Associate, Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, MS, August, 1975 - November, 1975

Teaching Fellow, Department of Pharmacognosy, School of Pharmacy, University of Pittsburgh, Pittsburgh, PA, September 1972 - August 1975

Instructor, Department of Pharmacognosy, Faculty of Pharmacy, Cairo University, Kasr El-Aini, Egypt, October, 1966 - August, 1972

Pharmacist, the Egyptian Company for Pharmaceutical Trading, Cairo, Egypt, July, 1966 - October, 1966

MEMBERSHIPS:

Rho Chi; Phi Kappa Phi; Sigma Xi; American Association for the Advancement of Science; American Society of Pharmacognosy; American Pharmaceutical Association; Fellow of the American College of Forensic Examiners; Fellow of the American Academy of Forensic Sciences; Society of Forensic Toxicologists; American Chemical Society; Fellow of the American Institute of Chemists; Society of Toxicology, Southeast Chapter; International Cannabinoids Research Society.

PATENTS:

1. ElSohly MA, and Turner CE; **Paraquat detection method**, U.S. Patent No. 4,187,076, issued February 5, 1980.

2. ElSohly MA, and Turner CE; **Process for preparing cannabichromene**, U.S. Patent No. 4,315,862, issued February 16, 1982.

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Aeroponically and Conventionally Grown Leafy Vegetables and Fruit Crops: A Comparative Study, **Evidence-Based Complementary and Alternative Medicine**, vol. 2014, Article ID 253875, 9 pages, 2014. doi:10.1155/2014/253875.

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MANUSCRIPTS SUBMITTED/ACCEPTED FOR PUBLICATION

1. Slade, D., ElSohly, M.A., New cannabinoids from high potency Cannabis: a short review (2005-2009), **Bioorganic & Medicinal Chemistry Letters**.

2. Ahmed M. Galal, Desmond Slade, Waseem Gul, Paulo Carvalho, Mahmoud A. ElSohly,; Synthesis and antiparasitic, anticancer and antimicrobial activities of artemisinin dimmers, (in Preparation) **Current Medicinal Chemistry.**

3. Mahmoud A. ElSohly, Mohamed M. Radwan, Waseem Gul, Suman Chandra and Ahmed Galal (2014) Phytochemistry of *Cannabis sativa* in 'Progress in the chemistry of organic natural products', *Eds.* A.D. Kinghorn, H. Falk and J. Kobayashi. (In press).

4. Hemant Lata, Suman Chandra, Yan-Hong Wang, Mahmoud ElSohly and Ikhlas A. Khan (2014) *In vitro* Germplasm Conservation of Elite *Stevia rebaudiana* Bertoni, Acta Horticulture. (In press).

5. Hemant Lata, Suman Chandra, Yan-Hong Wang, Mahmoud ElSohly and Ikhlas A. Khan (2014) *In vitro* Germplasm Conservation of Elite *Stevia rebaudiana* Bertoni, Acta Horticulture. (In press).

6. Development of a Lipid Based Sustained Release Δ9 Tetrahydrocannabinol Oral Formulation. (2014).

7. Mahmoud A. ElSohly and Waseem Gul , Constituents of Cannabis Sativa in Handbook of Cannabis, (Book Chapter) in press, 2014.

8. Mahmoud A. ElSohly, Waseem Gul, Candice Tolbert, Kareem M. ElSohly, Timothy P. Murphy, Bharathi Avula, Amar G. Chittiboyina, Mei Wang, Ikhlas A. Khan, Min Yang, Dean Guo, Wei-Dong Zhang

and Juan Su, Methylhexanamine Is Not Detectable in *Pelargonium* or *Geranium* Species and Their Essential Oils: A Multi-Center Investigation., Drug Testing and Analysis, 2014 (in press).

MANUSCRIPTS IN PREPARATION

1. Ahmed, S.A., Ross, S.A., Slade, D., Radwan, M.M., Khan, I.A., ElSohly, M.A.; Minor oxygenated Cannabinoids from High Potency Cannabis sativa L.

2. Mohamed M. Radwan, Mahmoud A. ElSohly, Abir T. El-Alfy, Susan, P. Manly, Safwat, A. Ahmed, Desmond Slade, Olivia Dale, Anwen Eslinger, Lisa Wilson, Kelly Ezell, Suzanne Seale, Stephen J. Cutler, and Samir A. Ross: Isolation and Pharmacological Characterization of Minor Cannabis Constituents.

3. Suman Chandra, Hemant Lata, Zlatko Mehmedic, Ikhlas A. Khan and Mahmoud A. ElSohly (2014) Light Dependence of Photosynthesis and Water Vapour Exchange Characteristics in Different High Δ^9-THC Yielding Varieties of *Cannabis sativa* L.

GRANTS AND CONTRACTS (1975-2013)

1. November 1975 – June 1979, Turner and ElSohly, Co-Principle Investigator, Production, Extraction, and Analysis of Cannabis, contract with NIDA-$738,687.00.

2. February 1977 – July 1977, Principle Investigator, Separation and Quantitative Determination of the Poison Ivy and Poison Oak Urushiols in Formulations Containing Corn Oil, contract with Hollister-Stier-$18,689.00.

3. March 1980 – June 1986, Waller and ElSohly, Co-Principle Investigator, Use of Cannabinoids in the Treatment of Glaucoma, contract with National Eye Institute-$600,353.00.

4. August 1980 – July 1981, Principle Investigator, Analysis of Paraquat and Other Pesticides in Pepper Mash, contract with McIlhenny Company (Tabasco)-$26,500.00.

5. October 1980 – September 1981, License Agreement for the Development of Tolerizing and Desensitizing Product of Poison Ivy, Poison Oak, and Poison Sumac Allergy, Hollister-Stier-$96,000.00.

6. April 1981 – September 1981, Turner and ElSohly, Co-Principle Investigator, Production of One Acre of Cannabis for Experimentation with Herbicides, contract with US State Department-$25,045.00.

7. July 1981 – September 1981, Turner and ElSohly, Co-Principle Investigator, Production and Analysis of Cannabis, contract with NIDA-$158,000.00.

8. August 1981 – February 1982, Principle Investigator, Analysis of d-limone-dimercaptan (dlDM) in Microencapsulated Double Walled Spheres, contract with US State Department-$23,409.00.

9. October 1981 – September 1984, Project Director, Production and Analysis of Cannabis, contract with NIDA-$990,478.00.

10. May 1982 – November 1982, Principle Investigator, Analysis of Urine Samples for Metabolites of delta-9-tetrahydrocannabinol using EMIT d.a.u. System, contract with Syva Corporation-$10,000.00.

11. June 1982 – November 1982, Principle Investigator, GC/FID Analysis of Urine Sample for the Major Metabolite of delta-9-tetrahydrocannabinol, contract with Department of the Navy-$5,250.00.

12. August 1982 – February 1983, Principle Investigator, Analysis of 2, 4-D in Coca in the Various Stages of Coca Refinement, contract with US State Department-$20,647.00.

13. November 1982, Principle Investigator, Preparation and Analysis of Purified Poison Ivy Extract, contract with Pharmacia Diagnostics-$1,500.00.

14. December 1982 – February 1983, Principle Investigator, Evaluation of Bond-elut-bonded Phase Silica Gel for Extraction of Urine Metabolite of Tetrahydrocannabinol, contract with Analytichem International, Inc.-$3,000.00.

15. January 1983 – September 1983, Principle Investigator, Cross Reactivity of Different Cannabinoids in the Radioimmunoassay of the Urinary Metabolite of delta-9-tetrahydrocannabinol, contract with Roche Diagnostics-$15,000.00.

16. March 1983, Principle Investigator, Isolation and Purification of the Diolefinic Component of Poison Ivy Urushiol, contract with Hollister-Stier-$2,000.00.

17. June 1983 – July 1983, Principle Investigator, Preparation of Tritium Labeled PDC-acetate and HDC-acetate, contract with Hollister-Stier-$4,000.00.

18. January 1984 – June 1984, ElSohly and Jones, Co-Principle investigators, Cross Reactivity of Cannabinoids in Newly Formulated Antibody for the Radioimmunoassay of the Urinary Metabolite of delta-9-THC, contract with Roche Diagnostics - $10,000.00.

19. July 1984 – June 1985, Principle Investigator, Use of Glyphosate as a Possible Herbicide for Marijuana and Coca Plants Project, contract with U.S. State Department - $20,000.00.

20. December 1984 – February 1985, Project Director, Production and Analysis of Cannabis, contract with NIDA - $33,088.00.

21. March 1, 1985 – February 28, 1988, Principle Investigator, Development and Analysis of Cannabis, Contract with NIDA - $788,753.00.

22. September 30, 1986 – May 31, 1990, Principle Investigator, Development of a New Formulation for Long-term Studies of delta-9-THC, SBIR grant from NIDA-$148,167.00.

23. January 1987 – December 1987, Principle Investigator, Study of Cross Reactivity of Different Cannabinoids and Other Drugs in the E-Z Screen for Cannabinoids, grant from Environmental Diagnostics - $5,000.00.

24. March 1987 – July 1987, Principle Investigator, Study of Cross Reactivity of Different Cannabinoids and Other Substances Against the Antibody in the Abbott Cannabinoids Assay, grant with Abbott Laboratories - $10,000.00.

25. March 1, 1987 – September 30, 1987, Principle Investigator, Examination of Pollen Grains of Cannabis Sativa Obtained from Different Origins, contract with DEA - $8,870.00.

26. March 1, 1987 – February 28, 1988, Principle Investigator, Study of the Chemistry of Coca Paste, Addendum to Production and Analysis of Cannabis, contract with NIDA - $26,000.00.

27. April 1987 – October 1987, Principle Investigator, Study of the Cannabis Pollen Plume Dispersion, grant from DEA - $16,495.00.

28. July 10, 1987 – November 30, 1987, Principle Investigator, Study Certain Issues Pertinent to Drug

Testing, contract with Department of the Army - $24,386.00.

29. November 12, 1987 – September 30, 1988, Principle Investigator, Analysis of Marijuana for Herbicides, contract with DEA-$17,000.00.

30. March 1988 – February 28, 1989, Project Director, Production and Analysis of Cannabis, contract with NIDA-$271,732.00.

31. March 1, 1988 – February 29, 1991, Principle Investigator, Production and Analysis of Cannabis Material, contract with NIDA - $832,589.00.

32. June 1, 1988 – June 15, 1988, Cooperative Work Assignment with Rust College-$2,250.00.

33. June 8, 1988 – September 30, 1988, Principle Investigator, Analysis of Marijuana for Specific Herbicides and Pesticides, contract with DEA-$14,000.00.

34. July 6, 1988 – June 6, 1989, Principle Investigator, Quantitative and Qualitative Analysis of the Air Surrounding Living Cannabis Sativa Plants, contract with DEA - $6,916.00.

35. July 18, 1988 – June 18, 1989, Principle Investigator, Analytic Analysis of Cannabis Pollen, contract with DEA - $15,989.00.

36. August 8, 1988 – June 8, 1989, Principle Investigator, Cultivation of one Acre of Cannabis Pollen, contract with DEA – $24,299.00.

37. March 1989 – February 28, 1990, Project Director, Production and Analysis of Cannabis, contract with NIDA.

38. June 1, 1989 – June 15, 1989, Cooperative Work Assignment with Rust College (0211601068)-$2,250.00.

39. 1991 – 1993, Co-Principle Investigator, Analytical Chemistry Evaluations for Environmental Monitoring and Assessment Program near Coastal/Gulf of Mexico Implementation, contract with EPA-$1,010,157.00.

40. March 1, 1991 – February 29, 1992, Co-Principle Investigator, Analytical Chemistry Evaluations for Environmental Monitoring and Assessment Program Near Coastal/Gulf of Mexico Implementation, contract with EPA-$233,700.00.

41. April 11, 1991 – November 15, 1991, Project Director, Emergency Production and Analysis of Cannabis sativa L., contract 271-91-7312 with NIDA-$210,477.00.

42. July 1, 1991 – April 30, 1992, Development of Reliable and Economic Sources of Taxol, contract with NCI-$116,023.00.

43. July 31, 1991 – December 31, 1991, Principle Investigator, Investigation of Cannabis Growth and Yield, contract with DEA.

44. September 30, 1992 – September 29, 1993, Project Director, Production and Analysis of Cannabis sativa L., contract 271-91-7312 with NIDA-$228,342.00.

45. September 30, 1993 – September 29, 1994, Project Director, Production and Analysis of Cannabis, contract 271-91-7310 with NIDA-$302,615.00 (year 1), $228,342.00 (year 2), and $239,062.00 (year 3).

46. 1994, Principle Investigator, Analysis of Confiscated Marijuana for Paraquat, contract with NIDA-$10,560.00.

47. September 30, 1994 – September 29, 1999, Project Director, Production and Analysis of Cannabis sativa L., 5-year contract N01DA-4-7404 with NIDA-$1,672,955.00.

48. April 1, 1999 – September 30, 2000, Principle Investigator, Development of Biologically-Based Methods for the Control of Cannabis, contract with USDA-$214,000.00.

49. June 1, 1999 – November 30, 1999, SBIR Contract Development of an Economic Supply of Δ^9-THC, contract with NIDA- subcontracted $28,616.00 to Principle Investigator, Dr. Samir Ross.

50. November 9, 1999 – November 8, 2004, Principle Investigator, Contract Analysis of Confiscated Marijuana for Paraquat, 5-year contract with NIDA-$30,000.

51. November 9, 1999 – April 15, 2005, Principle Investigator and Project Director, Production, Analysis and Distribution of Cannabis and Marijuana Cigarettes, 5-year contract N01DA-0-7707 with NIDA-$4,694,666.00.

52. November 9, 1999 – April 15, 2005, Principle Investigator, Analysis of Confiscated Marijuana for Paraquat, 5-year contract with NIDA-$150,000.00.

53. January 4, 2000 – March 31, 2001, Principle Investigator, Appropriate Quality Control Procedures of Herbal Drugs in Egypt, contract 93/03/09 with the Center (40%) and the Supreme Council of Universities of Cairo, Egypt (60%)-$200,000.00.

54. March 2000, Project Director, Production of 723g of Technical THC (purity over 90%), contract with Oxford Natural Product Company (England)-$40,000.00.

55. September 22, 2000 – September 1, 2002, Principle Investigator, Development of an Economic Supply of Δ^9-THC, contract with NIDA-$201.243.00.

56. November 2000, Project Director, Production of 7.24 kg Cannabis Extract (THC content over 40%), contract with Mallinckrodt Chemical Inc. (St. Louis, MO)-$290,000.80.

57. November 8, 2000 – November 9, 2004, Principle Investigator, Production, Analysis and Distribution of Cannabis and Marijuana Cigarettes (Amendment 3), contract with NIDA-$162,212.00.

58. August 21, 2001, Principle Investigator, Preparation of 4 kg Cannabis Extracts (THC content over 40%), contract with Mallinckrodt Chemical, Inc. (St. Louis, MO)-$160,000.00.

59. December 18, 2001, Principle Investigator, Preparation of 6.52 kg Cannabis Extracts (THC content over 48%), contract with Mallinckrodt Chemical, Inc. (St. Louis, MO)-$253,819.00.

60. March 2003 – December 2004, Principle Investigator, Preparation of Cannabis Extract

61. June 1, 2003 – May 31, 2004, Principle Investigator, Transmucosal Intra-Oral Drug Delivery System for THC, contract with NIH-$59,980.00.

62. May 2004, Principle Investigator, Preparation of Approximately 10 kg of material, contract with Mallinckrodt Chemical Inc. (St. Louis, MO)-$399,760.00.

63. June 2004, Principle Investigator, Preparation of Cannabis Extract – Filing the ANDA, contract with Mallinckrodt Chemical Inc. (St. Louis, MO)-$500,000.00.

64. October 2004, Principle Investigator, Preparation of Approximately 50 kg of material, contract with

Mallinckrodt Chemical Inc. (St. Louis, MO)-$764,086.00.

65. December 2004, Principle Investigator, Preparation of Approximately 60 kg of material, contract with Mallinckrodt Chemical Inc. (St. Louis, MO)-$1,100,000.00.

66. January 2005, Principle Investigator, Preparation of Approximately 20 kg of material, contract with Mallinckrodt Chemical Inc. (St. Louis, MO)-$375,000.00.

67. March 2005 – March 2010, Principle Investigator, Production, Analysis and Distribution of Cannabis and Marijuana Cigarettes, contract #NO1DA-5-7746 with NIDA-$5,670,472.00.

68. March 2005 – March 2006, Principle Investigator, Cultivation of Cannabis for Production of Cannabis Extract-Approximately $900,000.00 (MalinKrodt).

69. March 2006 – March 2007, Principle Investigator, Preparation of Cannabis Extract-$54,389.72.

70. March 2006 – March 2007, Principle Investigator, Cultivation of Cannabis for Production of Cannabis Extract-Approximately $850,000.00 (MalinKrodt).

71. August 2006 – July 2007, Principle Investigator, Composition for Prevention/Prophylactic Treatment of Poison Ivy Contact Dermatitis (subcontract to UM from ELI Phase I STTR grant – (approximately $40,000.00).

72. August 2006 – August 2007, Principle Investigator, Development and Validation of a Cannabis Chemical Fingerprinting-$220,000.00 (funded by the white house office of National Drug Control Policy/ONDCP).

73. September 2006 – June 2011, Co-Principle Investigator, Psychoactivity of Cannabinoids Other Than Major Ones Present in Cannabis Sativa L. As Well as Non-phenolic Cannabinoids Compounds and Study Their Interaction with delta 9-THC (Grant No.P20RR021929) ($1,080,000.00 (COBRE grant).

74. March 15, 2007 – March 14, 2008, Principle Investigator, Production, Analysis and Distribution of Cannabis and Marijuana Cigarettes and Related Materials, supplement to contract N01DA-5-7746 with NIDA-$322,858.00 for growing in 2007.

75. February 25, 2009, Principle Investigator, Production, Analysis and Distribution of Cannabis and Marijuana Cigarettes and Related Materials, 5-year contract N01DA-5-7746 with NIDA-$257,963.00.

76. May 2008, Principle Investigator, Execution of Manufacturing Options 2a, 2b, & 2c, Contract with NIDA (N01DA-5-7746)-$260,910.00.

77. June 2008- June 2010, Principle Investigator, Transmucosal Intra-Oral Drug Delivery System of THC Phase II STTR (Grant No. 2R42GM067304) $745,161.00.

78. Spring 2008-2009, Principle Investigator, Analysis of Confiscated Marijuana for Paraquat. Contract with NIDA- (N01DA-5-7746) $12,500.00

79. May 5, 2009, Principle Investigator, Production, Analysis and Distribution of Cannabis and Marijuana Cigarettes and Related Materials, 5-year contract N01DA-5-7746 with NIDA-$163,614.00.

80. October 2009- October 2011, Principle Investigator, Compositions for Prevention/Prophylactic Treatment of Poison Ivy Dermatitis Phase II STTR (Grant No.2R42AR053395) $759,254.00.

81. September 2009-August 2011, Co-Principle Investigator, Advancing Drug Development in

Medicinal Plants, (NIH-University of Kentucky, Grant No. 5RC2GM092521) $385,095.00.

82. Spring 2009, Principle Investigator, Development of Tetrahydrocannabinol Pro Drugs for Topical Treatment of Glaucoma. Phase I (Grant No.1R41EY020042) $100,000.00.

83. March 15, 2010-March 15, 2011 Principle Investigator, Production, Analysis and Distribution of Cannabis, and Marijuana Cigarettes, and Related Materials-with NIDA (N01DA-10-7773) $1,020,612.00.

84. March 16, 2011-March 15, 2012 Principle Investigator, Production, Analysis and Distribution of Cannabis, and Marijuana Cigarettes, and Related Materials- with NIDA (N01DA-10-7773) $846.882.00.
85. August 8, 2011-August 7, 2012 Principle Investigator, Production, Analysis and Distribution of Cannabis, Marijuana Cigarettes and Related Materials -2011 DEA Option-Modification No. 4, with NIDA (N01DA-10-7773) $42,000.00.

86. March 16, 2012-March 15, 2013 Principle Investigator, Production, Analysis and Distribution of Cannabis, and Marijuana Cigarettes, and Related Materials-with NIDA (N01DA-10-7773) $846.882.00.

87. August 8, 2012-August 7, 2013 Principle Investigator, Production, Analysis and Distribution of Cannabis, Marijuana Cigarettes and Related Materials -2012 DEA Option-Modification No. 7 with NIDA (N01DA-10-7773) $19,860.00

88. September 24, 2012-August 31, 2017 Mentor under projects 3 & 4, (Steve Cutler Principle Investigator) Center of Research in Excellence in Natural Product Neuroscience, 2012 with NIH-NIGMS, (Grant No. 9P20GM104932) $10,086,529 (COBRE Phase II)

89. March 16, 2013-March 15, 2014 Principle Investigator, Production, Analysis and Distribution of Cannabis, and Marijuana Cigarettes, and Related Materials-with NIDA (N01DA-10-7773) $846.882.00.

90. August 1, 2013 – July 31, 2014, PI @ 10% time commitment Orally active formulations of DHA dimers for the treatment of infectious diseases National Institute of Health, 1R41AI108113-01.

91. March 16, 2014-March 15, 2015 Principle Investigator, Production, Analysis and Distribution of Cannabis, and Marijuana Cigarettes, and Related Materials-with NIDA (N01DA-10-7773) $846.882.00

92. March 16, 2014-March 15, 2015 Principle Investigator, Production, Analysis and Distribution of Cannabis, and Marijuana Cigarettes, and Related Materials-with NIDA (N01DA-10-7773) Option 1A, $401, 619.00

Other Grants

1. Project Director, Provided VSM Geneesmiddelen by Homeopathic en Fytotherapie in Netherlands with 10 mg 3-n-pentadecyl catechol (PDC) and 10 mg 3-n-heptadecyl catechol (HDC)-$1,100.00.

2. Project Director, GC/MS Analysis of Water Sample# 972634 of "White Water" for both Poison Ivy and Poison Oak Urushiol, contract with Mead H & EP Lab (Miamisburg, OH)-$1,000.00.

Grants Submitted But Not Yet Funded

1. Principle Investigator, Composition for the Treatment of Methicillin-Resistant *Staphylococcus Aureus* Infections-$100,479.00.

3. Principle Investigator, Cannabinol Derivatives as Antimicrobial Agents-$99,912.00.

4. Principle Investigator Enhanced Delivery of THC Medications by Novel Prodrugs-$1,775,080.00.

5. Principle Investigator, Development of Reliable and Economic Sources of Taxol, contract with NCI-$60,000.00.

6. Principle Investigator, Development of a Suppository Formulation for an Anti-Cancer Artemisinin Dimer-$101,094.00.

7. Principle Investigator, Development of Orally Active Anti-Cancer Dihydroartemisinin Dimer-$101,094.00.

8. Principle Investigator, Truffles and Truffle-like Fungi: A Potential Source of Anti-Tuberculosis Agents- $216,000.00

9. Principle Investigator, Development of an Anti-Obesity Agent with Selective CB1 Antagonist Activity-- $99,923.00. (2010-2011)

10. Principle Investigator, Development of Natural Prolylcarboxypeptidase Inhibitors for the Treatment of Obesity—$99,830.00. (2010-2011).

11. Principle Investigator, Administrative supplement for parent grant 5R42GM067304-03 "Transmucosal Intra-Oral Drug Delivery System for THC" National Institute of Health, $142,026.00.

12. Principle Investigator, "Anticancer Combination Therapies with Dihydroartemisinin Dimers" Nation al Institute of Health, $2,587,278, (1RC2CA148204-01).

13. Principle Investigator, "Advancing a Treatment for Poison Ivy Dermatitis", National Institute of Health, $ 997,480.00, (1RC1AR058647-01).

14. Co-Principle Investigator, Cannabinol derivatives as Antimicrobial Agents, submitted to NIH, July 5th, 2008(STTR), $84,900.00.

15. Co-Principle Investigator, Mechanism of Antidepressant Actions of Cannabinoids, submitted to NIH, June 2008, $1,066,200.00.

16. Principle Investigator, Development of Artemisinin Dimer Combination Therapy (ADCT) for the Treatment of Cryptococcossis, $142,450.00.

17. Principle Investigator, Development of Natural Prolylcarboxypeptidase Inhibitors for the Treatment of Obesity, $127,438.00.

18. Principle Investigator, Isolation and Biological evaluation of Cannabis Minor constituents, submitted to NIDA, $1,790,000.00

19. Principle Investigator/Project Director "Development Studies for Dihyfroartemisinin Oxime Dimer (NSC 735847) as an Anticancer and Anti-Infective Agent", National Eye Institute, Submitted 04/03/2012.

20. Principle Investigator/Project Director @ 10% time commitment "Development of Novel Artemisinin Dimers for Treatment of Leishmaniasis" National Institutes of Health, $142,993.00, Submitted 08/06/12.

21. Principle Investigator/Project Director @ 20% time commitment "Development of Tetrahydrocannabinol Prodrugs for Topical Treatment of Glaucoma" Phase II, National Institutes of Health, $1,359,215.00, 1R41EY020042-01A1, submitted December 4, 2012.

22. Principle Investigator/Project Director @ 10% time commitment "Potency and Chemical Profile Data Base for Domestically Grown Cannabis" Phase I, National Institutes of Health, $149,083.00, submitted April 2, 2013.

23. Principle Investigator/Project Director @ 10% time commitment "GMP Production of THC and Selected Cannabainoids" Phase I, National Institutes of Health, $149,970.00, submitted April 4, 2013.

24. Principle Investigator/Project Director @ 10% time commitment "Development of Novel Artemisinin Dimers for Treatment of Leishmaniasis" Fast Track Phase I and Phase II, National Institutes of Health, $1,291,761.00, submitted April 5, 2013.

25. Principle Investigator/Project Director @ 10% time commitment "Bioassay-Based Standardization Methods for Immune Enhancing Dietary Supplements" National Institutes of Health, $223,487.79, Submitted 07/31/13, 1R41AT008315-01

26. Principle Investigator/Project Director @ 10% time commitment "Novel Artemisinin Dimers for Oral Treatment of Leishmaniasis" Dept. of the Army, $542,402.00, Submitted 10/07/13,

RECOGNITION AND HONORS

INTERNATIONAL

Lifetime Achievement Award from the International Cannabinoid Research Society, June 2013.

Invited speaker:"Marijuana from an old medicine to a new drug", 28th Egyptian International Pharmaceutical Conference, Cairo, Egypt, December, 2002.

Invited to present workshop on "Quality Control of Herbal Medical Products, University of Cairo, Egypt, March, 2001.

Invited speaker at the Natural Products Symposium sponsored by the International Pharmaceutical Federation, Montreaux, Switzerland, 1983.

Consulted by the Colombian National Committee on Narcotics in the area of marijuana and paraquat, 1983.

Nominated for the position of Director of the United Nations Narcotics Laboratory, 1982.

Selected as Consultant to the United Nations Industrial Organization (UNIDO) to set up a natural products research and development facility in Tanzania, 1982.

Selected as Consultant to the United Nations Industrial Organization (UNIDO) to set up a natural products research and development facility in Oman, 1982.

Invited to speak at the Erythroxylon—New Historical and Scientific Aspects Symposium in Quito, Ecuador, 1979.

Participated in United Nations sponsored meeting on chemistry and botany of Cannabis (1976) and presented a talk about new Cannabis constituents of chemotaxonominal value.

NATIONAL:

University of Pittsburgh,

University of Mississippi's Distinguished Research and Creative Achievement Award, 2013.

Legacy Laureate Award, University of Pittsburg, 2011
UM School of Pharmacy Researcher of the Year Award, 2011

Keynote speaker, Memphis Rotary Club Luncheon to discuss the Marijuana project at Ole Miss, Memphis, TN. February 2, 2010.

Instructor, CAP Laboratory Inspection at Spectrum Health Toxicology Laboratory, Grand Rapids, MI, March 21, 2010.

2002 Tibbetts Award to ElSohly Laboratories Incorporated (ELI)

Distinguished Alumnus Award, School of Pharmacy, University of Pittsburgh.

Fellow of the American College of Forensic Examiners.

Diplomat, American Board of Forensic Medicine

Diplomat, Board Certified Forensic Examiner.

Fellow, American Academy of Forensic Sciences

Fellow, American Institute of Chemists.

Member, Editorial Board of *Journal of Analytical Toxicology*

Member of Drug Testing Advisory Board, Substance Abuse and Mental Health Services Administration.

Member of Contract Review Committee or National Institute on Drug Abuse, Washington, DC

ElSohly Laboratories, Inc., certified by the DHHS National Laboratory Certification Program.

ElSohly Laboratories, Incorporated, certified by the College of American Pathologists.

Served as Inspector for the National Laboratory Certification Program, 1988 - present.

Member of US Navy Inspection Team for Navy Drug Testing Laboratories in Oakland, Great Lakes, Jacksonville, Norfolk, and San Diego Navy Drug Testing Laboratories, 1991 - 2003

Instructor, DHHS/NLCP Laboratory Inspection for Methodist Hospital, Indianapolis, Indiana, October, 1998.

Instructor Drug Enforcement Administration Marijuana Eradication School, Washington, DC, February, 1990.

Instructor, DEA Training Seminar, Western Conference, Albuquerque, NM, March, 1997.

Instructor, DEA Training Seminar, Eastern Conference, Charleston, SC, March, 1997.

Instructor for Marijuana Eradication School, State Association of Drug Enforcement Agencies, Knoxville, TN, February, 1990.

Member of National Institute on Drug Abuse Special Consensus Committee on Drug Testing,

Personal letter of commendation from President Ronald Reagan for work in area of drug testing and drugs of abuse, December 7, 1988.
Served as Consultant in the area of drug analysis of methods and procedures used by the Navy Drug Screening Laboratory, San Diego, CA, 1988.

Member of Special Grants Review Committee, National Institute on Drug Abuse, 1987-89.

Consulted by the Office of Drug Abuse Policy of the White House, National Institute on Drug Abuse, and Drug Enforcement Administration to set up national policies for domestically produced marijuana, 1982-1988.

Invited to discuss technical issues relative to drug testing at the National Athletic Training Association by the Professional Football Athletic Trainers' Association, 1987.

Invited by the Air Force to review operations of drug testing laboratory at Brooks Air Force Base and to make recommendations concerning operations and policy manual, 1985.

Invited by the Army to discuss Army's urinalysis testing program and to make recommendations, Fort Meade, MD, 1984.

Keynote speaker, South Central Chapter, Society of Forensic Toxicologists, University, MS, 1984.

Drug Abuse Consultant to the Assistant Secretary of the Navy, 1982-1983.

Consulted by the US State Department and US Department of Agriculture in the use of herbicides in the eradication programs of Cannabis and coca, 1982 - present.

Invited to speak to members of the Food and Drug Administration, Drug Abuse Advisory Committee, on the detection and analysis of paraquat in confiscated marijuana, 1982.

Participated with the National Institute on Drug Abuse and military personnel in discussions relative to the detection of cannabinoids in urine, 1982.

Reviewer for the Journal of Natural Products, Journal of Analytical Toxicology, and Current Eye Research.

Appeared as an expert witness since 1987 in more than sixty military and civilian (criminal) court cases related to drugs of abuse.

SELECTED PRESENTATIONS:

1. M. A. ElSohly, Euparone, a new benzofuran from *Ruscus aculeatus*. Presented at the Joint Meeting of the **American Society of Pharmacognosy and the Natural Products Section of the**

Academy of Pharmaceutical Sciences, Chicago, IL, August, 1974.

2. M. A. ElSohly, Trigilletimine, a new bisbenzylisoquinoline alkaloid from *Triclisia* species. Presented at the Annual **Meeting of the American Society of Pharmacognosy**, Storrs, Ct., July-August, 1975.

3. M. A. ElSohly, Isolation and structure determination of (+)-cannabitriol and 10-ethoxy-9-hydroxy-delta-6a (10a)-tetrahydrocannabinol, two new cannabinoids from *Cannabis sativa* L. extract. Presented at the **Annual Meeting of the American Society of Pharmacognosy**, Cable, WI, July, 1976.

4. M. A. ElSohly, (+) 9, 10-dihydroxy-delta-6a (10a)-tetrahydrocannabinol and (+) 8, 9-dihydroxy-delta-6a-10a)-tetra-hydrocannabinol, two new cannabinoids isolated from *Cannabis sativa* L.; Ruscodibenzofuran, a new dienzofuran from *Ruscus aculeatus* L. (Lilliaceae). Presented at the **Annual Meeting of the American Society of Pharmacognosy**, Seattle, WA, August, 1977.

5. M. A. ElSohly, Constituents of *Helenium amarum* (compositae) II. Isolation and characterization of heleniamarin and other constituents from *H amarum* leaves. Presented at the **American Society of Pharmacognosy Annual Meeting**, Seattle, WA, August, 1977.

6. M. A. ElSohly, Constituents of *Helenium amarum* III. Isolation and characterization of iso-heleniamarin, a new sesquiterpene lactone. Presented at the **American Society of Pharmacognosy Annual Meeting, Purdue University**, West Lafayette, In, July-August, 1979.

7. M. A. ElSohly, Gas chromatographic analysis of cocaine and other coca alkaloids in *Erythroxylon coca* collected in Peru, Erythroxylon—New Historical and Scientific Aspects. A **symposium sponsored by the Botanical Museum of Harvard University and the Casa de la Cultura del Ecuador**, Quito, Ecuador, December, 1979.

8. M. A. ElSohly, Anorexic and locomotor activity effects of cocaine and two coca extracts in rats. Poster presentation, **Federation of the American Societies for Experimental Biology**, Anaheim, CA, April, 1980.

9. M. A. ElSohly, Constituents of poisonous anacardiaceae: Production of immune tolerance and desensitization to the allergenically active urushiols. Presented at the **International Research Congress on Natural Products as Medicinal Agents, Joint Meeting of the Society for Medicinal Plant Research, the American Society of Pharmacognosy, the Phytochemical Society of Europe, and the Association Francas des Enseignants de Matiere Medicale**, Strasbourg, France, July, 1980.

10. M. A. ElSohly, The effects of cocaine and two coca extracts on scheduled controlled behavior. Poster presentation, **American Society for Pharmacology and Experimental Therapeutics**, August, 1980.

11. M. A. ElSohly, Cannabichromene (CBC) and its interaction with delta-9-THC. Presented at the **American Society for Pharmacology and Experimental Therapeutics Meetings**, August, 1980.

12. M. A. ElSohly, A primary screening of cannabinoids for glaucoma, **Pfizer BioMedical Research Symposium on Therapeutic Progress in Cannabinoid Research**, Groton, CT, October, 1980.

13. M. A. ElSohly, Biological activity of cannabichromene. Presented at the **Pfizer BioMedical Research Symposium on Therapeutic Progress in Cannabinoid Research**, Groton, CT, October, 1980.

14. M. A. ElSohly, Cannabinoids in glaucoma II: The effect of different cannabinoids on intraocular pressure. Presented at the **American Pharmaceutical Association Annual Meeting**, St. Louis, MO, March, 1981.

15. M. A. ElSohly, Studies of alkaloids of Cephalotaxus III: 4-Hydroxycephalotaxine, a new alkaloid from Cephalotaxus fortunei hook f. Presented at the **Joint Meeting of the American Society of Pharmacognosy and the Society for Economic Botany**, Boston, MA, July, 1981.

16. M. A. ElSohly, Isolation and characterization of the individual congeners of poison ivy and poison oak urushiol. Presented at **the Joint Meeting of the American Society of Pharmacognosy and the Society for Economic Botany**, Boston, MA, July, 1981.

17. M. A. ElSohly, Isolation and characterization of a new urushiol component from poison sumac. Presented at the **National Meeting of the American Chemical Society**, Las Vegas, NV, April, 1982.

18. M. A. ElSohly, Cannabinoids in glaucoma III: The effects of different cannabinoids on intraocular pressure in the monkey. Presented at the **Joint Meeting of the American Society for Pharmacology and Experimental Therapeutics and the Society of Toxicology**, Louisville, KY, August 1982.

19. M. A. ElSohly, Constituents of *Cannabis sativa* L. XXIII: Isolation and characterization of

cannabitetrol, a new Cannabis constituent. Presented at the **Joint Meeting of the American Society for Pharmacology and Experimental Therapeutics and the Society of Toxicology Annual Meeting**, Louisville, KY, August, 1982.

20. M. A. ElSohly, Effects of cannabichromene on hepatic microsomal enzyme activity In vitro . Presented to the **Southeastern Pharmacology Society Annual Meeting**, University of Mississippi, Oxford, MS, October, 1982.

21. M. A. ElSohly, Analysis of plant material for residual pesticides and herbicides. Presented to the **Academy of Pharmaceutical Sciences Annual Meeting**, San Diego, CA, November, 1982.

22. M. A. ElSohly, Improved GC methodology for the analysis of ll-nor-9-carboxy-delta-9-THC in urine. Presented to **White House Office of Drug Abuse Policy, National Institute on Drug Abuse, and Department of Defense Conference on Urine Analysis Screening Program in the Armed Forces**, Washington, DC, November, 1982.

23. M. A. ElSohly, A rapid GC procedure for the analysis of 11-nor-9-carboxy-delta-9-THC in urine. Presented at the **Association of Drug Detection Laboratories 8th Annual Symposium**, Austin, TX, December, 1982.

24. M. A. ElSohly, Stereochemical assignments for the two enantiomeric pairs of 9,l0-dihydroxy-tetrahydro- cannabinols. X-ray crystal structure analysis of (±)-*trans*-cannabitriol. Presented at **the American Society of Pharmacognosy Annual Meeting**, University of Mississippi, July, 1983.

25. M. A. ElSohly, Beta-hydroxybutyric acid polymer from *Hydroclathrus clathratus*. Presented at the **American Society of Pharmacognosy Annual Meeting**, University of Mississippi, July, 1983.

26. M. A. ElSohly, Cannabis: new constituents and their pharmacological action. Presented at the **43rd International Congress of Pharmaceutical Sciences of FIP**, Montreaux, Switzerland, September, 1983.

27. M. A. ElSohly, Analysis of the major metabolite of delta-9-tetrahydrocannabinol in urine V. Cross-reactivity of selected compounds in a radioimmunoassay; Analysis of the major metabolite of delta-9-tetrahydrocannabinol in urine IV. A comparison of five methods. Presented **to White House officials, Department of Defense, and National Institute on Drug Abuse Consultant Group**, Washington, DC, December, 1983.

28. M. A. ElSohly, Constituents of *Cannabis sativa* L. XXIV. The potency of confiscated marijuana, hashish, and hash oil over a ten-year period; Cross-reactivity of selected compounds in urine immunoassays for the major metabolite of delta-9-tetrahydrocannabinol; Analysis of human urine for 11-nor-delta-9-tetrahydrocannabinol-9-carboxylic acid. A comparison between HPLC, GC/FID, GC/ECD, and GC/MS methods. Presented at the Marijuana '**84 Symposium**, Oxford, England, August, 1984.

29. M. A. ElSohly, Analysis of human urine for 11-nor-delta-9-tetrahydrocannabinol-9-carboxylic acid, a comparison between HPLC, GC/ECD, GC/FID, and GC/MS methods. Presented at **the Memphis Chromatography Symposium**, Memphis, TN, October, 1984.

30. M. A. ElSohly, Urine analysis for delta-9-THC metabolites: screening and confirmation. Presented at **Fort Meade Conference**, MD, December, 1984.

31. M. A. ElSohly, GC/MS analysis of morphine and codeine in human urine of poppy seed eaters. Presented at the **American Academy of Forensic Sciences Annual Meeting**, San Diego, CA, February, 1987.

32. M. A. ElSohly, Technical issues in drug testing. Presented at the **National Athletic Trainers' Association**, Columbus, OH, April, 1987.

33. M. A. ElSohly, Bioavailability studies of delta-9-tetrahydrocannabinol from rectal suppositories containing the hemisuccinate ester in monkeys; Chromatographic and spectroscopic profiles (fingerprints) of Cannabis of different origins, Part I. Presented at the **Marijuana '87 Symposium**, Melbourne, Australia, September, 1987.

34. M. A. ElSohly, Urine standards and controls; preparation, use, and data review. Presented at the **Society of Forensic Toxicologists Meeting**, Key Biscayne, FL, September, 1987.

35. M. A. ElSohly, GC/MS analysis of phencyclidine acid metabolite in human urine. Presented at the Annual Meeting of the **American Academy of Forensic Sciences, Philadelphia**, PA, February, 1988.

36. M. A. ElSohly, Analysis and smoke characterization of Peruvian and Colombian coca paste samples. Presented at the Annual Meeting of the **American Academy of Forensic Sciences**, Philadelphia, PA, February, 1988.

37. M. A. ElSohly, $2H_6$-11-nor-delta-8-THC-9-COOH: A new internal standard for the analysis of THC

metabolite in biological fluids. Presented at the **Annual Meeting of the American Academy of Forensic Sciences**, Philadelphia, PA, February, 1988.
38. M. A. ElSohly, Community and corporate drug education. Presented at **South Central Bell**, Birmingham, AL, June, 1988.
39. M. A. ElSohly, expert witness testimony in area of drugs of abuse for civil litigation, New Orleans, LA, July, 1988.
40. M. A. ElSohly, Expert witness deposition in area of drugs of abuse for civil litigation, New Orleans, LA, March, 1988; September, 1988.
41. M. A. ElSohly, Contributions to society's efforts in combating drug abuse. Presented at **South Central Bell**, Guntersville Lake, AL, September, 1988.
42. M. A. ElSohly, GC/MS analysis of anabolic steroids in urine. Presented at the **40th American Chemical Society**, Southeast Regional Meeting, Atlanta, GA, November 9-11, 1988.
43. M. A. ElSohly, Expert witness testimony, litigation package review, and/or re-analysis of exhibits in the area of drugs of abuse for courts martial for the following: Andrews AFB; Blytheville AFB; Columbus AFB; Davis-Monthan AFB; Grissom AFB; Keesler AFB, Little Rock AFB; Mather AFB; McClellan AFB; Nellis AFB; Randolph AFB; Travis AFB (1987-1989).
44. M. A. ElSohly, Poppy Seeds Ingestion and Opiates Urinalysis: A Closer Look. Annual Meeting of **the American Academy of Forensic Sciences**, Cincinnati, OH, February 19-23, 1990.
45. M. A. ElSohly, Cross Reactivity of Selected Compounds in the Abbott TDx Cannabinoid Assay; Bioavailability of THC from Various Polar Esters in Suppository Formulations using Dogs and Monkeys. Presented at **Marijuana '90, Orthodox Academy of Crete**, Chania, Crete, Greece, July, 1990.
46. M. A. ElSohly, Canniprene: A Prototype Anti-inflammatory Natural Product. Presented at the **International Joint Symposium of Gesellschaft fur Arzneipflazenforschung /American Society of Pharmacognosy/ Association Francas pour l'Enseignement et la Recherche en Pharmacognosie/ Photochemical Society of Europe**, Bonn, Germany, July, 1990.
47. M. A. ElSohly, Comparative Clinical Bioavailability of Delta-9-THC from a Suppository Formulation. Presented at the **Third International Congress of Therapeutic Drug Monitoring and Clinical Toxicology**, Philadelphia, PA, May, 1993.
48. W.H. Benson , J.M. O'Neal, J.C. Allgood , M.A. ElSohly, J.K. Summers ; Evaluation of tissue residues for the Environmental Monitoring and Assessment Program near Coastal-Louisianian Demonstration, submitted to **Mississippi Water Resources Conference**, Jackson, MS, April, 1993.
49. M. A. ElSohly, New Internal Standards for Full-Scan GC/MS Analysis of Drugs of Abuse. Presented at the **American Academy of Forensic Sciences Annual Meeting**, Anaheim, CA, February, 1991.
50. M. A. ElSohly, A procedure for eliminating interferences from ephedrine and related compounds in the GC/MS analysis of amphetamine and methamphetamine. Presented at the **Society of Forensic Toxicologists Annual Meeting**, Montreal, Canada, September, 1991.
51. M. A. ElSohly, Classification of Cannabis samples according to their origin using GC profiles and neural networks. Presented at the **American Academy of Forensic Sciences Annual Meeting**, New Orleans, LA, February, 1992.
52. M. A. ElSohly, Clinical bioavailability of Δ^9-THC from a pro-drug suppository dosage form. Presented at the **International Cannabis Research Society Annual Meeting**, Keystone, CO, June, 1992.
53. M. A. ElSohly, Analytical methods and forensic toxicology issues concerning drugs of abuse, **American Society of Pharmacognosy**, Williamsburg, VA, July, 1992.
54. M. A. ElSohly, Taxol content of the needles of various cultivars of ornamental taxus. Presented at the **Taxol Workshop**, Washington, D.C., September, 1992.
55. M. A. ElSohly, Development of reliable and economic sources of taxol clippings of ornamental yews. Presented at the **Second National Cancer Institute Workshop on Taxol and Taxus**, Alexandria, VA, September, 1992.
56. M. A. ElSohly, Difluorococaine and difluorobenzoylecgonine as internal standards for the analysis of cocaine and benzoylecgonine in biological fluids. Presented at the **Society of Forensic Toxicologists Annual Meeting**, Cromwell, CT, October, 1992.
57. M. A. ElSohly, Tissue residue evaluations for the environmental monitoring and assessment program near coastal-Louisianian demonstration. Presented at the **Society of Environmental**

Toxicology and Chemistry, 13th Annual Meeting, Cincinnati, OH, November, 1992.
58. M. A. ElSohly, GC/MS analysis of oxycodone in urine using a trideuterated derivative as internal standard. Presented at the **American Academy of Forensic Sciences**, Boston, MA, February, 1993.
59. W.H. Benson, J.M. O'Neal , M.A. ElSohly .,J.K. Summers ; Chemistry evaluations for the U.S. EPA Environmental Monitoring and Assessment Program (EMAP) near Coastal-Louisianian Demonstration, submitted to **First Society of Environmental Toxicology and Chemistry World Congress**, Lisbon Portugal, March, 1993.
60. M. A. ElSohly, Evaluation of tissue residues for the Environmental Monitoring and Assessment Program Near Coastal-Louisiana Demonstration. Presented to the **Mississippi Water Resources Conference**, Jackson, MS, April, 1993.
61. M. A. ElSohly, Comparative Clinical Bioavailability of Delta-9-THC from a Suppository Formulation. Presented at the **Third International Congress of Therapeutic Drug Monitoring and Clinical Toxicology**, Philadelphia, PA, May, 1993.
62. M. A. ElSohly, Analysis of Meconium Specimens for Drugs of Abuse, I: Evaluation of Emit and TDx immunoassays as screening procedures. Presented at the **American Academy of Forensic Sciences Annual Meeting**, San Antonio, TX, February, 1994.
63. M. A. ElSohly, Drug testing in the workplace: Could the positive test for one of the mandated drugs be for reasons other than illicit use of the Drug? Presented at the **Society of Forensic Toxicologists Annual Meeting**, Tampa, FL, October, 1994.

64. M. A. ElSohly, Drug testing in the workplace: Could the positive test for one of the mandated drugs be for reasons other than illicit use of the Drug? Presented at the **Southern Association of Forensic Scientists Annual Meeting**, Tupelo, MS, May, 1995.
65. M. A. ElSohly, Volatile Oils from Fresh and Air-Dried Buds of *Cannabis Sativa* L; Fatty Acids of Cannabis Seeds: Effect of Seed Maturity, Age, and Country of Origin on Composition. Presented at the **American Society of Pharmacognosy Annual Meeting**, July, 1995.
66. M. A. ElSohly, Current Approaches in Forensic Toxicology Seminar, Panelist at the **American Academy of Forensic Sciences Annual Meeting**, Nashville, TN, February, 1996.
67. M. A. ElSohly, NIDA Potency Monitoring Project, **Drug Enforcement Administration Seminar**, Tampa Florida, March, 1996.
68. M. A. ElSohly, NIDA Potency Monitoring Project, **Drug Enforcement Administration Seminar**, Reno, Nevada, March, 1996.
69. M. A. ElSohly, Analysis of Aloe vera Mucilaginous Polysaccharide in Commercial Aloe vera Products; CBN; Delta-9-THC Concentration Ratio as an Indicator for the Age of Stored Marijuana Samples. Antinociceptive Effects of Cannabinoids in Models of Inflammatory Nociception in Rats. **Southeastern Pharmacology and South Central Society of Toxicologists Annual Meeting**, Oxford, MS, September, 1996.
70. M. A. ElSohly, Effects of Different Levels of Nitrogen and Phosphorous Fertilizers on the Amino Acid, Lipid, and Essential Oil Composition and Contents of *Nigella sativa* L Seeds; Chemical Composition of the Essential Oil of the Leaves and Flowering Tops of Centipeda cunningham A, B.R.; Quantitative, **Society of Forensic Toxicologists Annual Meeting**, Denver, CO, October, 1996.
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251. Mehmedic, Z., Chandra, S., Slade, D., Denham, H., Foster, S., Patel, A.S., Ross, S.A., Khan, I.A., ElSohly, M.A., Potency trends of Δ^9-THC and other cannabinoids in confiscated Cannabis preparations from 1993-2008. . **9th Annual International Conference on the Science of Botanicals,** University of Mississippi, Oxford, MS, April 12^{th}-16^{th}, 2010.

252. Lata, H; Chandra, Suman; Techen, N; Khan, IA; ElSohly, MA: Molecular Analysis of Genetic Stability in Synthetic Seeds Grown Cannabis sativa L. Plants. **10th Annual Oxford International Conference on the Science of Botanicals,** University of Mississippi, Oxford, MS, April 11-14, 2011.

253. Lata, H; Chandra, Suman; Mehmedic, Z; Khan, IA; ElSohly, MA: In vitro Germplasm Conservation of High THC Yielding Elite Clones of Cannabis sativa L. under Slow Growth Conditions. **10th Annual Oxford International Conference on the Science of Botanicals,** University of Mississippi, Oxford, MS, April 11-14, 2011.

254. Chandra, Suman; Lata, H; Galal, AM; Khan, IA; ElSohly, MA: Botany of Cannabis sativa L.: Identification, Cultivation and Processing. **10th Annual Oxford International Conference on the Science of Botanicals,** University of Mississippi, Oxford, MS, April 11-14, 2011.

255. Chandra, Suman; Lata, H; Techen, N; Mehmedic, Z; Khan, IA; ElSohly, MA: Analysis of Genetic Diversity using SSR Markers and Cannabinoid Contents in Different Varieties of Cannabis sativa L. **10th Annual Oxford International Conference on the Science of Botanicals,** University of Mississippi, Oxford, MS, April 11-14, 2011.

256. Chandra, Suman; Lata, H; Techen, N; Khan, IA; ElSohly, MA: Biotechnology of Cannabis sativa L. Planta Medica; **10th Annual Oxford International Conference on the Science of Botanicals,** University of Mississippi, Oxford, MS, April 11-14, 2011.

257. Chandra, Suman; Lata, H; Mehmedic, Z; Khan, IA; ElSohly, MA: Variations in Photosynthesis, Transpiration, Water Use and Cannabinoid Contents in Field Grown Drug Type Varieties of Cannabis sativa L. **10th Annual Oxford International Conference on the Science of Botanicals,** University of Mississippi, Oxford, MS, April 11-14, 2011.

258. Zlatko Mehmedic; Suman Chandra; Hemant Lata; Ikhlas Khan and Mahmoud ElSohly (2011) Estimation of useable biomass yield of outdoor cultivated cannabis sativa L. plants, **IACM, 6th Conference on Cannabinoids in Medicine and 5th Uropian workshop on Cannabinoid Research**, 8-10 September, Bonn, Germany.

259. Radwan, Mohamed; Thabet, Mena; Mohamed, Rabab; Seliem, Mohamed; Mohamed, Tarek and ElSohly, Mahmoud (2012) Secondary Metabolites from the Red Sea Soft Coral Sinularia Terspilli, **AAPS Annual Meeting and Exposition**, 14-18, October, Chicago, Illinois.

260. Chandra, Suman; Lata, H; Mehmedic, Z; Khan, IA; ElSohly, MA Propagating Medicinal Plants Under Good Agricultural Practices (GAP): *Cannabis sativa* L. - A Case Study, **11th Annual Oxford International Conference on the Science of Botanicals (ICBS),** April 16-19, 2012, Oxford, MS, Planta Medica; 78(5): 507

261. Chandra, Suman; Mehmedic, Z; Lata, H; Khan, IA; ElSohly, MA Biomass Yield Studies of Field Cultivated Cannabis sativa L. Plants, **11th Annual Oxford International Conference on the Science of Botanicals (ICBS)**, April 16-19, 2012, Oxford, MS., Planta Medica; 78(5): 507.

262. Chandra, Suman; Lata, H; Raman, V; ElSohly, MA; Khan, IA Acclimatization of Micropropagated Stevia rebaudiana Bertoni to ex-vitro Conditions: Comparative Ecophysiology and Leaf Anatomy, **11th Annual Oxford International Conference on the Science of Botanicals (ICBS),** April 16-19, 2012 Oxford, MS., Planta Medica; 78(5): 506.

263. Lata, H; Chandra, Suman; Techen, N; ElSohly, MA; Khan, IA Determination of Genetic Stability of Micropropagated Plants of Stevia rebaudiana Bert. using Inter-Simple Sequence Repeat (ISSR) Markers, **11th Annual Oxford International Conference on the Science of Botanicals (ICBS),** April 16-19, 2012 Oxford, MS., Planta Medica; 78(5): 505.

264. Lata, H; Chandra, Suman; Wang, YH; Moraes, RM; ElSohly, MA; Khan, IA In vitro Propagation and Metabolic Profiling of Elite Stevia rebaudiana Bert. Plants, **11th Annual Oxford International Conference on the Science of Botanicals (ICBS)**, April 16-19, 2012 Oxford, MS., Planta Medica; 78(5): 505.

265. Zlatko Mehmedic; Mohamed M. Radwan; Suman Chandra; Mudasir Tantry; Afeef S. Husni; Stephen Cutler; Ikhlas A. Khan; and Mahmoud A. ElSohly Volatile oil from a high potency *Cannabis*

sativa with in vitro binding affinity for human cannabinoid receptors **International Cannabinoids Research Society (ICRS)**, Freiburg im Breisgan , Germany, July 22-27, 2012.

266. Mohamed M. Radwan, Mena M. Thabet, Rabab Mohamed, Mohamed A. Seliem, Tarek A. Mohamed, Mahmoud ElSohly. Secondary metabolites from the Red Sea soft coral *Sinularia terspilli* **Association of Pharmaceutical Scientists (AAPS)**.October 14–18, 2012 Chicago, IL.

267. A.M. Metwally, A.A. Omar, M. E. Amer, M. I. Abou Shoer, S. A. El Toumy, Mohamed M. Radwan, Mahmoud A. ElSohly, S. M. El Sohafy Cornigerin, A new lignan from the hepatoprotective active fractions of Cynara cornigera **12th Annual Oxford International Conference on the Science of Botanicals (ICBS),** April 15-18, 2013 Oxford, Mississippi, Planta Medica; 79(5): 392.

268. Hala M. Hammoda, Nabila M. Ghazy, Fathalla M. Harraz, Mohamed M. Radwan, Mahmoud A. ElSohly, Ingy I. Abdallah, Phytochemical and antioxidant investigation of Tribulus terrestris. **12th Annual Oxford International Conference on the Science of Botanicals (ICBS),** April 15-18, 2013 Oxford, Mississippi, Planta Medica; 79(5): 392.

269. ND Chaurasiya, S Shukla, Mohamed M. Radwan, I Muhammad, SA Ross, MA Elsohly , LA Walker , BL Tekwani, Neuritogenic Effects of Cannabinoids with Nerve Growth Factor (NGF) on PC12 Cells. **12th Annual Oxford International Conference on the Science of Botanicals (ICBS),** April 15-18, 2013 Oxford, Mississippi, Planta Medica; 79(5): 403

270. Mohamed M. Radwan, Guoyi Ma, Mena M. Thabet, Rabab Mohamed, Mohamed A. Seliem, Tarek A. Mohamed, Amira S. Wanas, Mahmoud ElSohly, Anti-leukemic Metabolites from the Red Sea Soft Coral Sinularia terspilli, **2013 Annual Meeting of the American Society of Pharmacognosy (ASP),** St. Louis, Missouri, July 14-17, 2013. Planta Medica; 79(10): 843.

271. Mohamed M. Radwan, Mahmoud A. ElSohly, Nermeen A. Eltahawy , Amany K. Ibrahim, Hashim A. Hassanean, Safwat A. Ahmed, Anti- Cancer Cembranoids from the Red Sea Soft Coral Sarcophyton auritum, **2013 Annual Meeting of the American Society of Pharmacognosy (ASP),** St. Louis, Missouri, July 14-17, 2013. Planta Medica; 79(10): 843.

272. Amira S. Wanas, Hany. E. Khalil, Mostafa A. Fouad, Mohamed S. Kamel, Mohamed M. Radwan, Mahmoud A. ElSohly Phytochemical study of the leaves of Clerodendrum glabrum (Verbenaceae), **2013 Annual Meeting of the American Society of Pharmacognosy (ASP),** St. Louis, Missouri, July 14-17, 2013. Planta Medica; 79(10): 874.

273. Amira S. Wanas, Mostafa A. Fouad, Mohamed M. Radwan, Mohamed S. Kamel, Katsuyoshi Matsunami, Hideaki Otsuka, Mahmoud A. ElSohaly Bioactive triterpenes saponins from the leaves of Schefflera elegantissima, **2013 Annual Meeting of the American Society of Pharmacognosy (ASP),** St. Louis, Missouri, July 14-17, 2013. Planta Medica; 79(10): 863.

274. Zlatko Mehmedic, Mohamed M. Radwan, Amira S. Wanas, Ikhlas Khan, Mahmoud A. ElSohly, Antifungal activity of the volatile oil of high potency *Cannabis sativa* against *Cryptococcus neoformans,* **XXIX-The 7th International Association for Cannabis as Medicine (IACM) Conference,** September 27-28, 2013, Cologne, Germany.

275. Ajay P Nayak, Brett J Green, Gordon L. Sussman, Noam Berlin, Hemant Lata, Suman Chandra, Mahmoud A ElSohly, Justin Hettick, Donald H Beezhold, Characterization of *Cannabis Sativa*, **The American Academy of Allergy, Asthma & Immunolog(AAAAI) Annual Meeting,** February 22-26 (2013), San Antonio, Texas. Journal of Allergy and Clinical Immunology, 131(2), AB214.

276. Suman Chandra, Hemant Lata, Ikhlas A. Khan Mahmoud A. ElSohly, Ecophysiological Aspects of *In-vitro* propagated *Cannabis sativa* Plants during Acclimatization, **12th Annual Oxford International Conference on the Science of Botanicals** (ICBS), Oxford, Mississippi, USA. April 15-18, 2013.

277. Hemant Lata, Suman Chandra, Mahmoud A ElSohly, IA Khan Synthetic Seed Technology for Encapsulation and Regrowth of in vitro Derived *Stevia rebaudiana* Bert. nodal Segments, **12th Annual Oxford International Conference on the Science of Botanicals** (ICBS), Oxford, Mississippi, USA. April 15-18, 2013

278. Hemant Lata, Suman Chandra, Yan-Hong Wang, Mahmoud A. ElSohly, Ikhlas A. Khan, *In vitro* Germplasm Conservation of Elite *Stevia rebaudiana* Bertoni: An Important Medicinal Plant and a Natural Sweetener, **2nd International Symposium on Plant Cryopreservation**, Fort Collins, Colorado, USA. August 15-18, 2013.

MEETINGS ATTENDED:

45th International Symposium of Essential Oils (ISEO) 2014, Istanbul, Turkey, September 7-10, 2014.

2014 American Society on Pharmacognosy (ASP) Annual Meeting and the 14th Annual International Conference on the Science of Botanicals (ICBS), Oxford, Mississippi, August 2-6, 2014.

24th Annual International Cannabinoid Research Society Symposium on the Cannabinoids (ICRS), Baveno, Italy, June 28-July 3, 2014

13th International Conference on the Science of Botanicals (ICSB), Oxford, Mississippi, April 15-17, 2014.

4th Zing International Drug Discovery Conference, Nerja Malaga, Spain, February 15-20, 2014.

National Institute of Drug Abuse Meeting, Bethesda, Maryland, February 6-7, 2014.

Patent Meeting, Washington, DC, December 5-6, 2013.

43rd Annual Meeting of the Society of Forensic Toxicologists, (SOFT), Orlando, Florida, October 28-November 1, 2013.

National Institute of Drug Abuse (NIDA) Meeting, Bethesda, Maryland, October 18-20, 2013.

7th Conference on Cannabinoids in Medicine (ICAM), Cologne, Germany, September 27-28, 2013.

Bath Salts/Cannabis Meeting, Bethesda, Maryland, July 25-27, 2013.

23rd Annual International Cannabinoid Research Society Symposium, Vancouver BC Canada June 19-26, 2013.

12th International Conference on the Science of Botanicals (ICSB), Oxford, Mississippi, April 15-18, 2013.

Poison Ivy Patent Meeting, Washington, D.C., April 7-8, 2013.

GW Pharmaceutics Meeting, Washington, D.C., January 23-24, 2013.

Poison Ivy Development Team, Boston, Massachusetts, December 16-17, 2012.

22nd Annual International Cannabinoid Research Society Symposium on the Cannabinoids (ICRS 2012), July 23rd -26th, 2012, Freiburg, Germany.

Society of Forensic Toxicologists (SOFT) 2012 Annual Meeting, Boston, Massachusetts, July 1st-6th, 2012.

Poison Ivy Development Team Meeting, Philadelphia, Pennsylvanian, June 17th-19th 2012.

Italian Society of Phytotherapy, Siena Italy, June 6th-13th, 2012.

18th SNIP Scientific Conference, Honolulu, Hawaii, April 22nd-28th, 2012.

11th International Conference on the Science of Botanicals (ICSB), Oxford, Mississippi, April 15th-19th, 2012.

Regis Laboratory GMP Inspection, Chicago, Illinois, April 8th-9th, 2012.

College of American Pathology, (CAP), Inspection of Laboratory, Calgary, Canada, March 21st-26th, 2012.

64th Annual Scientific Meeting Global Research: The Forensic Science Edge, Atlanta, Georgia, February 20th-25th, 2012.

Hampten Sciences, Poison Ivy Team, Memphis, Tennessee, January 20, 2012.

50th Anniversary meeting Phytochemical Society of North America, Kohala Coast, The Big Island, Hawaii, December 9th-14th, 2011.

"Development of Herbal Products in USA"; University of Hunan, Changsha, China, October 26th -27th, 2011.

"Natural Product Research at NCNPR"; Changchun University, Changchun, China, October 24th -25th, 2011.

"Development of Herbal Products in USA"; 4th Shanghai TCM Conference, Shanghai, China, October 22nd -23rd, 2011.

University of Pittsburgh Legacy Laureate, Pittsburgh, Pennsylvania, October 12th-15th, 2011.

2011 Joint Meeting of the Society of Forensic Toxicologists (SOFT) and The International Association of Forensic Toxicologists (TIAFT), San Francisco, California, September 25th-30th, 2011.

Medical Societies and Associations "Marijuana as Medicine – A Fresh Look", Washington D. C., September 15th, 2011.

IACM 6th Conference on Cannabinoids in Medicine and 5th European Workshop on Cannabinoid Research, Bonn, Germany, September 8th-10th, 2011.

52nd Annual Meeting American Society of Pharmacognosy, San Diego, California, July 30th-August 3rd, 2011.

21st Annual Symposium on the Cannabinoids (ICRS2011), St. Charles, Illinois, July 5th-10th, 2011.

Hapten Sciences Prophylaxis Therapy for Poison Ivy, Sumac and Oak, Memphis, Tennessee, June 15th-16th, 2011.

10th International Conference on the Science of Botanicals (ICSB), Oxford, Mississippi, April 11th-15th, 2011.

Marijuana Eradication Program Meeting with ONDCP, Washington, D.C., March 14th-15th, 2011.

GW Pharmaceutics Meeting, Washington, D.C., January 18th-19th, 2011.

Annual Society of Forensic Toxicology (SOFT) Meeting, Richmond, VA, October 16th-22rd, 2010.

Indo-US Symposium on Methodology of Research in Indian Systems of Medicine, Bangalore, India, December 6th-14th, 2010.

4th World Ayurveda Congress, Bangalore, India, December 6th-14th, 2010.

GW Pharmaceutics Facilities Tour and Meeting, London, UK, November 28th-December 2nd, 2010.

2010 Society of Forensic Toxicologists (SOFT) Annual Meeting, Richmond, VA, October 16th-22nd, 2010.

The Southern Association of Forensic Scientist Fall Meeting, Tunica, MS, September 22nd-23rd, 2010.

NIDA Dissertation Committee Meeting, Washington, D.C., August 12th-14th, 2010.

International Cannabis Research Conference (ICRS), Lund, Sweden, July 23rd-28th, 2010.

CAP Inspection at Spectrum Health Toxicology Laboratory, Grand Rapids, MI, March 21st-23rd, 2010.

9th International Conference on the Science of Botanicals (ICSB), Oxford, Mississippi, April 12th-16th, 2010.

Marijuana Eradication Program Meeting with ONDCP, Washington, DC, March 14th-15th, 2010.

Memphis Rotary Club Luncheon, Memphis, TN, February 2nd, 2010.

GW Pharmaceutics Meeting, Washington, DC, January 18th-19th, 2010.

18th Annual Symposium of IRCS, Aviemore Conference"A Fresh Look at Cannabinoids and Cognitions", University of Aberdeen, Aviemore, Scotland, June 26th-29th, 2009.

1st Satellite Meeting of the International Cannabinoid Research Society, Limassol, Cyprus, May 1st-5th, 2009.

Annual Society of Forensic Toxicology (SOFT) Meeting, Oklahoma City, Oklahoma, October 17th-23rd, 2009.
19th Annual Symposium of the International Cannabinoid Research Society, St. Charles Illinois, July 7th-12th, 2009.

American Society of Pharmacognosy 50th Anniversary Meeting, Honolulu, Hawaii, June 27th-July 1st, 2009.

8th International Conference on the Science of Botanicals (ICSB), Oxford, Mississippi, April 6th-9th, 2009.

6th NHP Research Society of Canada, Vancouver BC, Canada, February 18th-22nd, 2009.

NIDA Contract Meeting, Washington DC, January 29th-30th, 2009.

7th Oxford International Conference on Science of Botanicals (ICSB), "Critical Approaches to Pre-clinical Evaluation of Botanicals", Oxford, April 12th -16th, 2008.

Ist Annual Satellite symposium on the Cannabinoids "Therapeutic Potential of the Cannabinoids: Present and Future", St. Raphael Resort, Cyprus, May 1-4, 2008.

Shanghai International Conference on Traditional Chinese Medicine and Natural Medicine, Shanghai, China, October 10th – 12th, 2008.

Indo-US symposium on Indian Systems of Medicines and Botanicals, Nasc Complex, Pusa, New Delhi, October 15th- 16th, 2008.

2008 Annual American Academy of forensic Sciences Meeting, Washington, D.C., February 16th -22nd, 2008.

Society of Forensic Toxicology (SOFT)Meeting, Research Triangle Institute, Raleigh/Durham, North Carolina, December 13th-19th, 2007.

International Cannabinoids Research Society (ICRS) Meeting and Symposium –Clearwater, Quebec, Canada, June 26th -30th, 2007.

6th Oxford International Conference on Science of Botanicals (ICSB), "Critical Approaches to Pre-clinical Evaluation of Botanicals", Oxford, April 30th – May 3rd, 2007.

University of Rhode Island Seminar Program, "Marijuana in Forensic", University of Rhode Island, Kingston, Rhode Island, April 5th -8th, 2007.

DEA Symposium 2006: Plants of Abuse—San Diego, California, May 3-5, 2006.

16th Symposium on the Cannabinoids –Tihany, Hungary, June 25 – 28, 2006.

Phytochem Society of North America Annual Meeting – Oxford, MS, July 8 – 12, 2006.

47th Annual Meeting of the American Society of Pharmacognosy - to Arlington, VA, August 5 – 9th, 2006.

5th Oxford International Conference on Science of Botanicals (ICSB), "Quality, Safety and Processing of Botanical Products", Oxford, August 21st – 24th, 2006.

Society of Forensic Toxicologists (SOFT) annual meeting – Austin, TX, October 4 – 7, 2006.

Indo-US Conference on "New Bioactive Molecules in Pharmaceutical Research Contribution of Natural Products" at Hyderabad (India) 13-14 November, 2006.

American Academy of Forensic Sciences (AAFS) Annual Meeting – Seattle, Washington, February 20 – 23, 2006.

International Cannabinoids Research Society (ICRS) Meeting and Symposium –Clearwater, Florida, June 2005.

American Society of Pharmacognosy (ASP) Annual Meeting –Portland, Oregon, July 2005.

IACM Annual Meeting – Amsterdam, September 6-11, 2005.

India Conference – India September 6 – October 11, 2005.

Society of Forensic Toxicologist (SOFT) –Nashville, TN, October 18 – 21, 2005.

American Academy of Forensic Sciences (AAFS) Annual Meeting – to attend the toxicology section of the poster presentations and meet with Humana Press publisher regarding publication related to marijuana chemistry and botany activities in New Orleans, LA, February 21 to February 26, 2005.

Drug Testing Advisory Board Meeting – to attend as one of the board members in Washington, D.C. in March 2004, June 2004, September 2004, December 2004 and March 2005.

Drug Testing Advisory Meeting – to share thoughts about federal workplace Drug Testing Programs in Bethesda, MD, June 7 to June 9, 2004.

International Cannabinoids Research Society (ICRS) Meeting and Symposium – to attend annual conference and workshops in Paestum, Italy, June 22 to June 27, 2004.

International Congress on Natural Products Research (ICNPR) and the American Society of Pharmacognosy (ASP) Annual Meeting – to attend annual conference and workshops in Phoenix, AZ, July 30 to August 5, 2004.

Society of Forensic Toxicologists Annual Meeting – to attend conference in Washington, D.C., August 27 to September 3, 2004.

American Association of Pharmaceutical Scientists (AAPS) Annual Meeting – to attend meetings on naturceuticals (natural products), nutraceuticals, herbal botanicals, and psychoactives; drug discovery and drug-drug interactions in Baltimore, MD, November 4 to November 7, 2004.

International Cannabis Research Society, Ontario, Canada, June 24-28, 2003

International Association for Cannabis as Medicine, Cologne, Germany, September 8-13, 2003

Society of Forensic Toxicologists, Portland, Oregon, October 20-24, 2003

Participated as a member of the Drug Testing Advisory Board, Washington, DC, 2002-2003.

Annual Meeting of the Society of Forensic Toxicologists, Detroit, Michigan, October, 2002.

Participated on Federal Consensus Panel on the Best Practices in the Use of Clinical Drug Testing in Addiction Treatment, Washington, DC, November, 2002.

Annual Meeting of the American Association of Pharmaceutical Scientists, Toronto, Canada, November 11-13, 2002.

National Center for Natural Products Research Annual Poster Session, The University of Mississippi, October 4, 2002.

National Center for Natural Products Research Annual Poster Session, The University of Mississippi, November 30, 2001.

Twenty-eighth Egyptian International Pharmaceutical Conference, Cairo, Egypt, November 11-13, 2002.

Joint Interim Meeting of the American Society of Pharmacognosy and Council for Responsible Nutrition, Asilomar Center, Monterey Peninsula, CA, November 8-11, 2001.

Symposium for the Summer Research Institute for Undergraduates and AGEM Graduate Bridge Program, University of Mississippi, July 30-31, 2001.

Forty-Second Annual Meeting of the American Society of Pharmacognosy, Oaxaca, Mexico, July 14-18, 2001.

Meeting on Quality Control of Herbal Medical Products, University of Cairo, Cairo, Egypt, March, 2001.

Midwest Association of Toxicology and Therapeutic Drug Monitoring Meeting, Kansas City, MO, May, 2000.

American Academy of Forensic Sciences, 51st Annual Meeting, Orlando, Florida, February, 1999.

Society of Forensic Toxicologists/International Association of Forensic Toxicologists (SOFT/TIAFT) Annual Meeting, Albuquerque, New Mexico, October, 1998.

International Cannabinoids Research Society, LaGrande, France, July, 1998.

American Association of Clinical Chemistry, Chicago, IL, June, 1998.

International Conference on Marijuana for Medicine, New York University Medical Center, New York, NY, March, 1998.

Drug Testing Advisory Board, Center for Substance Abuse Prevention, Gaithersburg, MD, March, 1998.

American Academy of Forensic Sciences, San Francisco, CA, February, 1998.

Society of Forensic Toxicologists, Salt Lake City, UT, October, 1997.

International Association of Forensic Toxicologists (TIAFT), Padova, Italy, August, 1997.

American Society of Pharmacognosy (ASP), Iowa City, IA, July, 1997.

International Cannabinoids Research Society, Stone Mountain, GA, June, 1997.

Substance Abuse Program Administrators Association (SANAA), St. Louis, MO, May, 1997.

American Society of Addiction Medicine, San Diego, CA, April, 1997

International Aloe Vera Council, Dallas, TX, April, 1997.
Drug Enforcement Administration Seminar, Eastern Conference, Charleston, SC, March, 1997.

Drug Enforcement Administration Seminar, Western Conference, Albuquerque, NM, March, 1997

Junior Science and Humanities Symposium, University of Mississippi, March, 1997.

American Academy of Forensic Sciences, New York, NY, February, 1997.

Society of Forensic Toxicologists, Denver, CO, October, 1996

American Society of Pharmacognosy, Santa Cruz, CA, July, 1996.

International Cannabinoid Research Society, West Dennis, MA, June, 1996

Substance Abuse Program Administrators Association, Salt Lake City, UT, May, 1996.

Drug Enforcement Administration Seminar, San Francisco, April, 1996

Drug Enforcement Administration Seminar, Reno, NV, March, 1996.

Drug Enforcement Administration Seminar, Tampa, FL, March, 1996

American Academy of Forensic Sciences, Nashville, TN, February, 1996.

Southern Association of Forensic Scientists, Tupelo, MS, May, 1995.

American Society of Forensic Scientists, Seattle, WA, February, 1995.

Society of Forensic Toxicologists, San Antonio, TX, February, 1994.

American Society of Pharmacognosy, 34th Annual Meeting, July, 1993, San Diego, CA.

Taxol Symposium, Stony Brook, New York, May, 1993

Annual Meeting of the Society of Forensic Toxicologists, Cromwell, CT, October, 1992.

Annual Meeting of the American Society of Pharmacognosy, Williamsburg, VA, July, 1992.

Meeting of the International Cannabis Research Society, Keystone, CO, June, 1992.

Annual Meeting of the American Academy of Forensic Sciences, New Orleans, LA, February, 1992.

Annual Meeting of the Society of Forensic Toxicologists, Montreal, Canada, September, 1991.

Annual Meeting of the American Academy of Forensic Sciences, Anaheim, CA, February, 1991.

Annual Meeting of the Society of Forensic Toxicologists, Long Island, NY, September, 1990.

International Joint Symposium of Gesellschaft fur Arzneipflazenforschung/American Society of Pharmacognosy/ Association Francas pour l'Enseignement et la Recherche en Pharmacognosie/Photochemical Society of Europe, Bonn, Germany, July, 1990.

Marijuana '90, Orthodox Academy of Crete, Chania Crete, Greece, July, 1990.

Annual Meeting of the Society of Forensic Toxicologists, Cincinnati, OH, February 19-23, 1990.

Meeting of the Society of Forensic Toxicologists, Chicago, IL, October 18-20, 1989.

Annual Meeting of the America Society of Pharmacognosy, San Juan, Puerto Rico, August 6-10, 1989.

Annual Meeting of the American Academy of Forensic Sciences, Las Vegas, NV, February 16-17, 1989.

Annual Meeting of the American Academy of Forensic Sciences, Philadelphia, PA, February, 1988.

Center for Professional Development—Bioavailability and Pharmacokinetics, Scientific and Regulatory Aspects, East Brunswick, NJ, May, 1988.

Center for Professional Development—Good Laboratory Practices, Chicago, IL, June, 1988.

Annual Meeting of the American Pharmaceutical Association, Bethesda, MD, September, 1988.

Annual Meeting of the Society of Forensic Toxicologists, Miami, FL, September, 1987.

Marijuana '87 Symposium, Melbourne, Australia, September, 1987.

Annual Meeting of the American Society of Pharmacognosy, Kingston, RI, July, 1987.

Florida Safety Council Meeting, Pensacola, FL, April, 1987.

Annual Meeting of the American Academy of Forensic Sciences, San Diego, CA, February, 1987.

Annual Meeting of American Academy of Forensic Sciences, New Orleans, LA, February, 1986.

Joint Meeting of National Institute on Drug Abuse, Drug Enforcement Administration, State Department, and White House Office of Drug Abuse Policy Development, Washington, DC, November, 1985.

Waters-Millipore Seminar, Cincinnati, OH, March, 1985.

Annual Meeting of American Academy of Forensic Sciences, La Vegas, NV, February, 1985.

Joint Meeting of National Institute on Drug Abuse, Drug Enforcement Administration, and White House personnel relative to the hybridization of Cannabis, Washington, DC, January, 1985.

Conference on urine analysis for delta-9-THC metabolites: Screening and confirmation, Fort Meade, MD, December, 1984.

Meeting of the South Central Chapter, Society of Toxicology, University of Mississippi, keynote speaker, November, 1984.

Memphis Chromatography Symposium, Memphis, TN, October, 1984.
Ninth International Congress of Pharmacology, 3rd Satellite Symposium on Cannabis, Marijuana '84 Symposium, Oxford, England, August, 1984.

Forty-third International Congress of Pharmaceutical Sciences of FIP, Montreaux, Switzerland, September, 1983.

Annual meeting of the American Society of Pharmacognosy, University of Mississippi, July, 1983.

Meeting of the White House Office of Policy Development regarding the cultivation of Cannabis and the setting up of national policies for domestically produced marijuana, Washington, DC, April, 1983.

Meeting of the White House Office on Drug Abuse Policy, National Institute on Drug Abuse, and Department of Defense on urinalysis screening programs in the Armed Forces, Washington, DC, November, 1982.

Meeting with Dr. John Gavin of Hollister-Stier to review the chemistry, stability, and formulations of the new product to be used for desensitization to poison ivy, Spokane, WA, November, 1982.

Meeting with the Drug Enforcement Administration and National Institute on Drug Abuse regarding the Potency Monitoring Project and the Paraquat Project, Washington, DC, October, 1982

Meeting with officials of the State Department and Department of Agriculture regarding 2, 4-D in coca leaves and collection of samples, September, 1982.

Annual meeting of the American Society of Pharmacognosy, Pittsburgh, PA, August, 1982.
Joint meeting of the American Society for Pharmacology and Experimental Therapeutics and the Society of Toxicology, Louisville, KY, August, 1982.

Participated with the National Institute on Drug Abuse and military personnel in discussions relative to the detection of cannabinoids in urine, Washington, DC, May, 1982.

Joint meeting of the American Society of Pharmacognosy and the Society for Economic Botany, Boston, MA, July, 1981.

American Pharmaceutical Association annual meeting, St. Louis, MO, March, 1981.

International Research Congress on Natural Products as Medicinal Agents, joint meeting of the Society for Medicinal Plant Research, the American Society of Pharmacognosy, the Phytochemical Society of Europe, and the Association Francas des Ensignants de Matiere Medicale, Strasbourg, France, July, 1980.

Erythroxylon—New Historical and Scientific Aspects, a symposium sponsored by the Botanical Museum of Harvard University and Casa de la Cultura del Ecuador, Quito, Ecuador, December, 1979.

International Symposium on Recent Advances in Antibiotics and Alkaloids, American Society of Pharmacognosy Annual Meeting, Purdue University, West Lafayette, IN., July, 1979.

American Society of Pharmacognosy Annual Meeting, Stillwater, OK, August, 1978.
Invited speaker to the members of the Food and Drug Administration Drug Abuse Advisory Committee on Detection and Analysis of Paraquat in Confiscated Marijuana, Wash., DC, 1978.

American Society of Pharmacognosy Annual Meeting, Seattle, WA, August, 1977.

United Nations sponsored meeting on the Botany and Chemotaxonomy of Cannabis, University of Mississippi, University, MS, September, 1976.

American Society of Pharmacognosy Annual Meeting, Cable, WI, July, 1976.

American Society of Pharmacognosy Annual Meeting, Storrs, CT, July-August, 1975.

Joint meeting of the American Society of Pharmacognosy and the Pharmacognosy and Natural Products Section of the Academy of Pharmaceutical Sciences, Chicago, IL, August, 1974.

Court File No. T-2030-13

FEDERAL COURT

BETWEEN:

NEIL ALLARD
TANYA BEEMISH
DAVID HEBERT
SHAWN DAVEY

PLAINTIFFS

and

HER MAJESTY THE QUEEN IN RIGHT OF CANADA

DEFENDANT

Certificate Concerning Code of Conduct for Expert Witnesses

I, Mahmoud ElSohly, having been named as an expert witness by the Defendant, Her Majesty the Queen in Right of Canada, certify that I have read the Code of Conduct for Expert Witnesses set out in the schedule to the *Federal Courts Rules* and agree to be bound by it.

Date: October 15, 2014

Mahmoud A. ElSohly, Ph.D., BCFE, BCFM
President
ElSohly Laboratories, Incorporated (ELI)
5 Industrial Park Drive
Oxford, MS 38655
Tel (662) 236-2609
Fax (662) 234-0253
www.elsohly.com