Herbal Remedies: Effects on Laboratory Tests

By Michael R. O’Leary, M.D., CEO

Herbal remedies and medicines are widely available in the United States without a prescription. While the U.S. Food and Drug Administration (FDA) regulates drugs and requires that they are safe and effective, most herbal products are classified as dietary supplements or foods and the FDA does not require demonstration of efficacy.

While the general population may believe that anything “natural” is safe, the fact is that herbal remedies, like manufactured pharmaceuticals, can be toxic and have significant side effects. Inappropriate use or overuse of herbal medicines may even cause death.

Despite their potential toxicity, there is widespread use of herbal medicines in the U.S., the most common remedies being ginseng, echinacea, gingko biloba and St. John’s Wort. While the use of herbal medicines continues to grow, recent reports of adverse therapeutic drug interactions, toxic side-effects and altered laboratory tests underscore the need for users to inform their healthcare providers of such use to ensure their safety.

Effects on Tests

Most people taking herbal remedies are unaware that some may cause abnormal results on blood tests or cause serious interactions with certain medications. An herbal medicine may affect laboratory test results by 1 of 4 mechanisms:

1. direct test interference due to cross-reactivity of a component of the herb
2. unexpected drug concentrations due to drug-herb interactions
3. effects of contaminants in herbal remedies
4. direct toxicity of the herbal active ingredient

Frequent therapeutic drug monitoring is often necessary to ensure that a person is receiving the appropriate dose of a drug to be effective. Several herbal medicines have been shown to interfere with such blood measurements of certain medications.

Chan Su and Dan Shen are Chinese medicines which have active ingredients that are structurally similar to digoxin and may cause falsely-elevated levels of digoxin, a medication used to treat heart failure. As a result, a healthcare provider might decrease the dose of digoxin, which could lead to potentially serious heart failure.

In the second mechanism, herbal medicines may cause unexpected concentrations of therapeutic drugs by altering that drug’s metabolism, which is most vividly portrayed by St. John’s Wort. Most commercially available St. John’s Wort preparations in the U.S. are dried extracts of the flowering plant Hypericum. The plant’s principal ingredient induces the cytochrome P450 oxidase enzyme system in the liver which is responsible for the metabolism of many therapeutic drugs. This results in actual decreased drug concentrations and corresponding clinical effects. Use of St. John’s Wort has been reported to result in the increased breakdown and elimination of immunosuppressants (tacrolimus and cyclosporine), antiretroviral drugs used for HIV infections, as well as methadone, theophylline and lipid-lowering drugs (simvastatin). Warfarin (Coumadin) is a drug used to inhibit blood clotting and is known to interact with many herbal medicines. Some herbal products will increase warfarin’s effectiveness (gingko and Dan Shen) which can lead to uncontrolled bleeding while another (ginseng) decreases its effectiveness, leading to blood clots.

The third way in which herbal remedies may affect lab tests is by the action of contaminants. Herbal products are not prepared following rigorous pharmaceutical standards and wide variations in the concentrations of the active ingredients may occur. In addition, the labeling of herbal products may not accurately reflect their content. Adverse events or interactions attributed to a specific herb may be due to misidentification of plants, contamination of plants with pharmaceuticals or heavy metals, and poor quality control.

The addition of various Western drugs to Chinese herbal products has frequently been reported and includes acetaminophen, indomethacin, phenytoin and hydrochlorothiazide. Heavy metal contamination of Asian remedies has also been reported, particularly lead, arsenic and mercury.

Direct toxicity of herbal products may also occur. Kava-kava is an herbal remedy with a purported anti-anxiety or calming effect. However its use may cause severe hepatotoxicity. Heavy consumption

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Medical Technologists and Clinical Laboratory Scientists are Top Careers

Medical technologists (MT) and clinical laboratory scientists were declared among “The 50 Best Careers of 2011” by U.S. News & World Report (USNWR) in its annual survey of high-demand careers. Editors at the news magazine reported “clinical lab technicians and technologists” to be the “unsung heroes of the healthcare industry.”

The special issue of USNWR featuring “The 50 Best Careers of 2011” was published on Dec 6, 2010. MTs, pathologists and clinical laboratory managers are profiled under “Best Careers 2011: Lab Technician.” This is the second year that lab technician has made the list.

In summary, USNWR noted that lab technicians can expect faster-than-average job growth, fairly low stress levels, good annual pay and opportunities for upward mobility.

The article also noted that the demand for all sorts of technical healthcare positions will increase around the world. Healthcare systems on four continents have reported serious shortages in skilled technical employees in all aspects of healthcare.

Laboratory Alliance has been responding to this shortage for several years. In our second issue of LabLines, published in March/April 2004, we announced the development of our Medical Technologist Training Program. Headed by Education Services Manager Lonnie Stallcup, the program was started to recruit college graduates with degrees in biology, chemistry and biochemistry, to become medical technologists. Through a venture with the University of Texas Medical Branch (UTMB), the University provided online didactic training while Laboratory Alliance provided hands-on bench training.

While the affiliation with UTMB proved to be successful in training technologists, the introduction of licensure to New York State forced Laboratory Alliance to seek an in-state distance training program.

In 2004, Laboratory Alliance co-wrote a grant proposal with Broome Community College (BCC), and were awarded funds by the New York State Department of Health to begin training technologists in May 2005. At the completion of the three-year grant project, BCC and Laboratory Alliance produced 12 new technical employees. Graduates of BCC’s technical training program qualify for a one-year limited permit, but must pass the American Society for Clinical Pathology (ASCP) Medical Technologist Licensure Exam within that year.

While the affiliation with BCC has greatly enhanced our workforce, more work remains to be done. In Laboratory Alliance’s 2009 Operations Report, Stallcup reported that over the next five years, approximately 19% of the workforce could be lost to retirement. However, current enrollments of medical technology students at both BCC and Upstate Medical University seem to offer promise that those positions will be filled.

Yet, still more needs to be done. Even if all of our medical technology schools are filled nationally, we would not be meeting the current demand for technologists (Source: Dr. Andrea Wade - Telephone Survey of NYS Clinical Laboratory Programs, October 2005, Bill Connolly, Labforce Services).

Technology Corner

The following new tests and test methods have been added to the menu of tests performed by Laboratory Alliance:

- New Direct Test for Detection of Group A Streptococci in Pharyngeal Specimens
- PCR Test for Detection of Methicillin Susceptible (MSSA) and MRSA in Nasal Specimens

Please note that our most current laboratory test menu and other important information can be found on our Web site at www.laboratoryalliance.com.

Welcome to our New Clients

Dr. Robert Druger
Druger Eye Care
Camillus, N.Y.

Women’s Health
Camillus, N.Y.

Dr. Sayeeda Mohiuddin
Syracuse, N.Y.

Associates for Women’s Medicine
Fayetteville, Liverpool, North Syracuse and Syracuse, N.Y.
A Look Back at the Annual Holiday Party

More than 250 employees and their spouses and friends attended Laboratory Alliance’s annual Holiday Party held Jan. 8 at the Holiday Inn in Liverpool. Pictured are 8 of the more than 30 photos taken throughout the evening by Anne Marie Mullin, Vice President of Business Development and Marketing.
Pharyngitis or sore throat is an inflammatory disease of the pharynx and is one of the most common illnesses for which patients visit primary care physicians. In the U.S. alone, an estimated 200 patients per 1,000 population seek medical attention each year for the evaluation of sore throat.

Most pharyngeal infections are caused by viruses and occur as part of the common cold and influenza syndromes. Among the bacteria, the group A streptococcus (GAS), also known as Streptococcus pyogenes, is by far the most common and important bacterial cause of infection. In adults, GAS cause approximately 5 to 10% of pharyngeal infections while the incidence is typically a much higher 20 to 40% in children, particularly in those between the ages of 3 to 15 years of age. Pharyngitis occurs most commonly in the colder months of the year with the peak season being late fall through early spring. Disease transmission generally occurs following non-exudative pharyngitis. Importantly, the presence or absence of an exudate along with the clinical presentation of the disease are not reliable predictors in determining whether a patient has pharyngitis caused by a GAS or a virus.

The most reliable way to establish the diagnosis of pharyngitis caused by GAS is by performing an appropriate laboratory test. Laboratory methods commonly used to detect GAS in throat specimens include culture, rapid antigen tests (RATs), and a newly developed molecular-based assay that detects GAS nucleic acids directly in the specimen.

The cultural recovery of GAS from a pharyngeal specimen is regarded as the traditional “gold standard” test for establishing the laboratory diagnosis of infection and has a reported sensitivity of 95%. However, culture is a time-dependent method that requires 24 to 48 hours before a final result is available. As an alternative, rapid antigen tests (RAT) may be used for the detection of GAS in pharyngeal specimens. The advantage of the RAT is that the test can be performed directly on the specimen with the results usually available within 15 to 20 minutes of specimen collection. A major disadvantage in the use of RAT is that the commercially-available assays are not very sensitive (70% to 85%) and patients with a “negative” RAT should have a follow-up throat culture performed to reliably rule out the presence of GAS infection.

Recently, a GAS probe test, called the Group A Strep Test, has been developed for the direct detection of GAS in pharyngeal specimens. The GAS probe test screens for the presence of ribosomal RNA that is specific for GAS. Final test results for specimens received in the microbiology laboratory by 11 p.m. are usually available the following morning. Most importantly, studies have shown that the Group A Strep Test is comparable in sensitivity to culture (99.6%) thereby eliminating the need to perform follow up cultures on specimens that have a negative test. Laboratory Alliance’s Microbiology Department has been using this GAS probe test since November of 2010 and has found that it provides a rapid and reliable alternative to routine culture for the laboratory diagnosis of this infection.

Streptococcal pharyngitis is a self-limited disease with symptoms usually improving within three to five days without antibiotic treatment. However, it is essential that GAS infections be reliably diagnosed and properly treated. Left untreated, patients with GAS pharyngitis are at risk of developing the non-suppurative sequelae of rheumatic fever and glomerulonephritis. Both of these sequelae are allegedly due to immune complex diseases that result from antibodies produced against certain M proteins of GAS that cross react with antigens in heart valves and kidney tissue. In addition, treatment of GAS pharyngitis with an appropriate antibiotic will also shorten the duration of symptoms by about 16 hours and the period of infectivity thereby allowing the child to often return to school 24 hours after the initiation of antibiotic therapy.

The GAS are universally susceptible to penicillin and penicillin remains the drug of choice for treatment in the non-penicillin allergic patient. If the patient is allergic to penicillin, the macrolide antibiotic, erythromycin, is recommended. However, due to the widespread use of other macrolide antibiotics (i.e., azithromycin and clarithromycin) for the treatment of other infectious processes, 15 to 20% of GAS are now resistant to these antimicrobial agents in Central New York. In such cases, the use of an oral cephalosporin has been shown to be highly effective in eradicating GAS pharyngeal infections.
Revised CDC Guidelines for Prevention of Perinatal Group B Streptococcal Disease

By Paul A. Granato, Ph.D., Director of Microbiology

In the Nov. 19, 2010, issue of Morbidity and Mortality Weekly Report (www.MMWR/november192010/vol59//rr10), the Center for Disease Control and Prevention (CDC) published revised and updated guidelines for the prevention of perinatal Group B streptococcal disease. These new guidelines have been endorsed by the American College of Obstetricians and Gynecologists, the American Academy of Pediatrics, and several other major accrediting organizations. This most recent guideline represents the culmination of several generations of revised and updated recommendations for the prevention of neonatal GBS infection that were first published in the mid-1990s.

Before active preventive measures for neonatal GBS infections were first instituted in the 1990s, an estimated 7,500 cases of neonatal GBS disease occurred annually in the United States. Striking declines in disease incidence coincided with the institution of increased prevention activities in the 1990s, and a further reduction occurred following the issuance of the recommendation for universal screening in 2002. However, GBS disease remains the leading infectious cause of morbidity and mortality among newborns in the United States. The continued burden of disease and newly available data relevant to early-onset GBS disease prevention from the fields of epidemiology, obstetrics, neonatology, microbiology, molecular biology and pharmacology prompted revision of the guidelines for early-onset GBS disease prevention.

The key changes in the CDC’s 2010 guidelines include the following:
- Expanded recommendations on laboratory methods for the identification of GBS.
- Clarification of the colony-count threshold required for reporting GBS detected in the urine of pregnant women,
- Updated algorithms for GBS screening and intrapartum chemoprophylaxis for women with preterm labor or preterm premature rupture of membranes,
- A change in the recommended dose of penicillin-G for chemoprophylaxis,
- Updated prophylaxis regimens for women with penicillin allergy, and
- A revised algorithm for management of newborns with respect to risk for early-onset GBS disease.

Universal screening at 35 to 37 weeks’ gestation for maternal GBS colonization and use of intrapartum antibiotic prophylaxis has resulted in substantial reductions in the burden of early-onset GBS disease among newborns. Although early-onset GBS disease has become relatively uncommon in recent years, the rates of maternal GBS colonization (and therefore the risk for early-onset GBS disease in the absence of intrapartum antibiotic prophylaxis) remain unchanged since the 1970s. Continued efforts are needed to sustain and improve on the progress achieved in the prevention of GBS disease.

Laboratory Alliance’s Microbiology Department performs two different assays for the detection of GBS in vaginal/rectal specimens. The first is a molecular-based PCR assay that is performed on the specimen following an 18 hour broth culture enrichment while the second is also a gene amplification PCR assay that is performed directly on the specimen and does not require an 18 hour broth enrichment. The major advantage of this latter PCR test is that it can be performed on women who enter Labor and Delivery who have not had the benefit of previous prenatal care with highly reliable results available in less than two hours of specimen receipt by the laboratory. A recent evaluation of this assay compared to standard culture following broth enrichment (El Helali, N. et al. 2009. Clin. Infect. Dis. 49: 417-423) showed that the rapid PCR test was comparable to culture with a sensitivity and specificity of 98.5% and 99.6 % respectively.

Health care providers are reminded that the reliability of any test result is greatly influenced by paying strict adherence to specimen collection guidelines. Specific information on the proper collection of vaginal/rectal specimens for GBS testing may be obtained by consulting the appropriate GBS Technical Bulletins that can be found on the Laboratory Alliance website at www.laboratoryalliance.com. This website also has information regarding the new CDC guidelines.

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has been associated with increased liver enzymes (ALT, AST and GGT), indicating liver damage.

Herbal Remedies and Perioperative Patients

Use of herbal remedies by perioperative patients is a significant problem due to potential interventions between herbal supplements and anesthetics, as well as the risk of bleeding during and after surgery. The American Association of Anesthesiologists recommends that all herbal supplements should be discontinued two weeks prior to elective surgery.

Herbal remedies are crude products often with varying concentrations of active ingredients as well as adulteration with Western pharmaceuticals and occasionally heavy metals. While some manufacturers of herbal remedies may attempt to provide consistent levels of active ingredients without adulterating compounds, the lack of standardization techniques may have adverse effects on the safety and efficiency of the final products.

I am not recommending a bias against herbal remedies. Worldwide, there is a resurgence of herbal medicines and I acknowledge their potential. My purpose is to create awareness among healthcare providers regarding the use of herbal remedies by their patients and the possible complications associated with them. Abnormal laboratory tests may serve as a cue for healthcare providers to investigate the use of herbal remedies in their patients.
Roseanne Seifert Presented with the CHAMP Award

Anyone in charge of payroll is well respected in most offices and that’s the case at Laboratory Alliance! **Roseanne Seifert**, Payroll and Benefits Specialist, was presented the CHAMP Award in January, but her accolades go beyond doing the payroll for 435 employees. Roseanne was recognized for her considerate manner, consistent accuracy and her attention to details.

On January 8, Chris Garritano, RRL Manager at Crouse Hospital, presented the CHAMP Award to Roseanne at the annual Holiday Party. Roseanne has been the Payroll and Benefits Specialist for Laboratory Alliance since April 2009. She has more than 16 years of experience in payroll and benefits administration, a Bachelor of Science in Business Administration and is a New York State Notary Public.

Roseanne always demonstrates the qualities of a CHAMP: Caring, Helpfulness, Accuracy, Motivation and Professionalism. Roseanne's co-workers nominated her for many reasons, writing: “Roseanne is always consistent and professional”; “Roseanne always meets deadlines, which is very important when doing a payroll for 435 employees”; ”Roseanne is always calm and decisive,” and; “Roseanne always places the employee first.”

We are proud to recognize Roseanne as our January CHAMP!

IN REMEMBRANCE OF LYNN

Lynn Eggert tragically died in November after being hit by a distracted motorist.

A Tribute to Lynn Eggert

By Terry Tirabassi, MT(ASCP)

Lynn Eggert passed away suddenly on November 10, 2010. It was an unbelievable tragedy. Lynn had worked for St. Joseph’s Hospital and Laboratory Alliance for 37 years. It is hard to describe the shock we all felt. Even today it feels like any minute we’ll hear Lynn laugh or see her enter the lab with a smile and friendly greeting.

There are so many ways to describe Lynn and it would take several pages to include every accolade. There is no one word or phrase that can plainly describe people’s feelings for her. Suffice it to say that Lynn was loved by so many.

Following are some excerpts from the notes I received from my co-workers:

“Lynn was dedicated to the important things in life, family, church and community. She had a calm about her that kept things under control. You knew all would be okay.”

“I attended Lynn’s daughter, Stephanie’s, wedding in September. Lynn looked stunning! She welcomed us with a warm hug. It was obvious she was so proud of her daughter and her new son-in-law David.”

“Lynn was the ‘Guru’ of chemistry... she knew what to do and was always available to help out. There are many reminders of Lynn throughout the lab, in every nook and cranny.”

“Both Lynn’s daughter and mine were married in September. We shared our plans and ideas. We both celebrated the success of the weddings and shared our pictures. I’ll miss Lynn dearly and our thoughts and prayers go out to Steve and Stephanie.”

“Lynn was the constant. She was the teacher, the organizer and the counselor. She remains with us through every person she trained.”

“Lynn always invited me to join her for breakfast. When I went to work nights I missed her invitations. She would always say ‘good morning ladies’ or ‘it’s time to go home.’ She was a wonderful person and friend.”

“I’ll never forget how generous Lynn was when my daughter had a baby. That was Lynn, always giving to others.”

“Lynn promised me in writing on December 23 that ‘she would be nice to me for the whole year.’ (Of course, there was only one week left in the year).”

“I have known Lynn since we were in kindergarten. She had a calm, even temperament and a very keen wit. She was an excellent teacher, knowledgeable and professional with a strong sense of teamwork.”

Personally, Lynn was like a sister to me. Parties, car-pooling, sharing angst, coffee breaks, lunches... life... Having known Lynn for almost 30 years, it has been comforting to receive notes and vignettes from her workmates and friends. Like losing a family member, the warm memories and good times won’t be forgotten.

As one co-worker so eloquently wrote, “Laboratory Alliance has suffered a huge loss; however, Lynn’s spirit and strengths will never be forgotten. Her impact on others will carry on and that is a most wonderful legacy to have.”

Lynn M. Eggert
June 12, 1953 – November 10, 2010
New Employees

Please welcome our new employees

**At our Operations Center**
- Gene Cusano – Courier
- John Eckert – Courier
- Maureen Fritz – Phlebotomist
- Matthew Jones – Phlebotomist
- Mark Jordan – R & D Specialist
- Patrick Kennedy – Courier
- Louis Manzietti, Jr. – Courier
- Jill Nicholas – Histologist
- Mitalbahen Patel – Medical Technologist
- Edward Pickering – Courier
- Jeff Piscitell – Engineering Assistant
- Michael Rapson – Courier
- Paul Renaud – Courier
- Daniel Tiff – Lead Engineer
- Nikki Zingaro – Laboratory Office Assistant

**At our Rapid Response Laboratory**
- at Community General Hospital
  - Mary Ellen Zackevich – Medical Technologist

**At our Rapid Response Laboratory**
- at Crouse Hospital
  - Amanda Farnham – Laboratory Office Assistant
  - Jarret Pendl – Laboratory Office Assistant
  - Katie Raimondo – Medical Technologist

**At our Rapid Response Laboratory**
- at St. Joseph’s Hospital
  - Robert Szkatok – Laboratory Office Assistant
  - Lauren Usherwood – Laboratory Office Assistant

Employee Anniversaries

**January, 5 years:**
- Kurt Alpha
- Beverly Carrigan
- Michael Manfredi
- Patricia Wojcik

**January, 10 years:**
- Lucinda Ross

**February, 5 years:**
- Marene Ballard
- Vickie Campany
- Jennifer Kerfien
- Heidi Ricci

**February, 10 years:**
- Nashid Khan
- Kerry Whiting

**March, 5 years:**
- Andrea Bertolero

**March, 10 years:**
- Salvador Banan
- Diane Dermody

Laboratory Alliance Employees Give Generously to Toys for Tots

By Dru Ellen Clay, MS,MT(ASCP) SH
Materials Manager, Operations Center

The Toys for Tots collection of new, unwrapped toys was again a success at Laboratory Alliance. On Dec. 22, Material Handler Supervisor Mark Adkins and Material Handler Jon McCabe picked up the collection boxes at our Rapid Response Laboratories and our Corporate Office.

The US Marines Corp picked up our donations from the Operations Center later that day.

On behalf of the Activities Committee, thanks to everyone for their generosity this holiday season. Every gift was greatly welcomed and appreciated.

As Americans continue to age, more testing is required more frequently.

- As of January 1997, one baby boomer is turning 50 years of age about every 7 seconds.
- Almost 13% of the U. S. population is now over 65 years old
- The over-85 category, which requires the greatest amount of healthcare services, is also growing rapidly.
Crashes from cell phone use are on the rise. Both handheld and hands-free devices increase reaction time and are equally as dangerous. As of January 1, 2010, seven states have implemented handheld cell phone bans and 19 have text messaging bans for all drivers. Don’t wait for legislation to drive safely.

It’s important to:
• Silence your phone before you begin your drive
• Set up a voice mail message that explains you’re on the road, practicing safety to protect yourself and fellow drivers
• Stop texting while driving.
Research shows drivers who text are 8 to 23 times as likely to be involved in a collision
• Pull over and park if a call is absolutely necessary
• Encourage your friends and family to leave their phones out of reach while driving

When your doctor orders lab tests, we’re in your neighborhood.
Our Medical Center East location offers EASY ACCESS and prompt, courteous SERVICE.
Free parking, close to the building • Only steps inside the front entrance
Patients are served promptly.

No call is more important than someone’s life.