

## **2007-2008 Undergraduate Student Scholarship Activities**

### **Case Publications**

1. Cheryl L. Golson, M. Douglas Bearden and George B. Kudolo. The Melting Pot – A Case Study in Forensic Toxicology. ASCLS Today 2008. 22(7); 9-11.
2. Leslie Whitehouse, George B. Kudolo, and M. Douglas Bearden. Sickie-Cell Crisis – A Hospital story. ASCLS Today. In press

### **Student Projects**

**Project 1.** What is the effective dose of licorice needed to therapeutically lower serum testosterone in men and women?

Students: Daniel Martinez, Tesha Mason, Jin Park, Sunam Park, Helen Sanchez

#### **Abstract:**

Licorice is an extract from the root of *Glycyrrhizin* and is used to provide a sweet taste for a variety of candies, soft drinks, and teas. Licorice also has a role in treatment of stomach ulcers and arthritis and may be used for soothing sore throats. However, increased licorice consumption can negatively impact our ability to reproduce by decreasing serum testosterone. The purpose of our research is to demonstrate the effects of licorice on testosterone levels through a double blind placebo controlled study that will take place at the University of Texas Health Science Center at San Antonio. All study participants (males from the age of 18-29 years) will reside at the facility for a period of one week where they will receive either a 7g (this is equivalent to 500mg of Glycyrrhizine) licorice capsule or a placebo capsule daily along with planned meals and snacks. At the end of the one week period we expect to see a decrease in testosterone in all those participating in this study. Proving that licorice decreases serum testosterone can have an impact on fertility studies and family planning for men and women who are in good overall health and may be without an explanation for why conception is not occurring.

**Project 2:** Does milk with IGF-1 lead to an increased incidence of breast cancer in women?

Students: Patty Carrillo, Cheryl Golson, Diana Trinh, Raquel Clark, & Jeannie Seiler

#### **Abstract:**

Breast Cancer is the most common cancer among women in the United States. In the Western world there is an increased incidence often attributed to lifestyle. Researchers have begun to consider dietary factors and their contribution to increased incidence of breast cancer. This is because many foods today are treated to allow for mass production and economic benefit to the manufacturers. Dairy producers have been injecting growth hormones into cows resulting in increased production of insulin like growth factor 1 (IGF-1) in the milk. IGF-1 is responsible for increased cell proliferation and inhibition of apoptosis, thus has been linked to cancer. We believe that the IGF-1 in milk will result in an increased incidence of breast cancer in women. The study proposed includes 300 women aged 40-50 years old with no history of cancer.

The women will belong to one of three groups based on their diet: regular dairy consumers, organic dairy consumers, and non-dairy consumers. Their IGF-1 levels will be measured and diets followed for one year. To determine cancer incidence mammograms and tumor markers will be measured at the beginning and end of the study. Logistic regression analysis will then be utilized to determine the correlation between cancer incidence and their IGF levels and milk diet. We expect to see a strong correlation between the incidence of breast cancer and IGF-1 among the women drinking milk from cows given growth hormone. This will provide further evidence of the dietary factors contributing to cancer incidence.

Project 3: The Benefits of Resveratrol for Post-Menopausal Women in Lowering One Risk of Coronary Heart Disease.

Students: Leron King, Jose Villarreal, Crystal Castillo, Christine Bernal, Nathan Diaz

**Abstract:**

Postmenopausal women are most likely to suffer the onset of Coronary Heart Disease (CHD) mainly due to the absence of estrogen following additional physiological effects of menopause. Currently the primary treatment for side affects caused by the onset of menopause is Hormone Replacement Therapy, which presents its own onslaught of negative side effects and does not promise to lower the risk of CHD. Resveratrol is a compound which appears structurally similar to estrogen, and has been linked to geographical areas where the occurrence of CHD is particularly low due to a large consumption of the compound which is typically found in red wines. The sample population will be postmenopausal women who are determined to be at risk according to a lipid panel measuring their High Density Lipoproteins (HDL), Low Density Lipoproteins (LDL), Total Cholesterol, and Triglyceride levels. Resveratrol will be administered in 50mg tablets daily for a period of five weeks, and then switched to a placebo for five weeks. Blood samples will be drawn from the patients at the start of the study, at week 5, 6, and week 11 to measure their lipid panels during the five weeks of taking each pill and one week following the initial five week period when the patient will not be taking either pill. Since Resveratrol is structurally similar to estrogen, we expect that Resveratrol will have similar benefits of hormone replacement therapies where a form of estrogen is administered. Resveratrol is expected to be proven beneficial to postmenopausal women who are lacking estrogen, and we expect this without any negative side effects as Resveratrol does not poses the same biological function as the hormone estrogen. With the administration of Resveratrol, a significant increase in HDL levels is expected which would prove Resveratrol to be an effective agent in lowering one of the risks for CHD.

Project 4: Soy Infant Formula

Students: Uchenna Gbugu, Richard Lara, Karen Reyna, Purvi Patel, Leslie Whitehouse

**Abstract:**

We are a student research group interested in soy and its effects on the body. Soy as a nutritional product is widely used in infant formulas. Although it could be beneficial to an

extent, it also has its negative side effects. We are interested in the side effects that may occur as a result of short and long term use of soy based infant formulas, particularly gynecomastia in boys and precocious puberty in girls. Once ingested, soy is broken down to a compound called phytoestrogen. These are estrogen-like and tend to mimic estrogen once in the body. We believe that the phytoestrogen is the active metabolite of soy that may be responsible for gynecomastia in boys and precocious puberty in girls. We are asking for a grant of \$100,000. This money will be used towards paying our subjects, the cost of the reagents and supplies to run the tests, pay our employees, and other miscellaneous items that may be needed during the course of this study. During this study the researchers will screen 180 children, 90 boys and 90 girls all together. They will randomly be placed into one of three groups. Group one will have 30 boys and 30 girls. This group is the control group. They will not be introduced to soy infant formula at all. Group two has 30 boys and 30 girls and these subjects will take soy formula for one year. The third group will have 30 boys and 30 girls. This group will take a soy formula for one year and then have soy milk for the next four years. After the initial assessment of the children they will participate in this study for eight years and will be given \$320 over the course of the eight years. Since soy is used by many people we want to prove or disprove if soy really is a reason for the creation of gynecomastia in boys and precocious puberty in girls.