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Education Posters

E-2000

Improving the *Oryza sativa's* Abiotic Stress Tolerance Based on the Genetic Engineering of the Osmoregulated Trehalose Synthesis A Gene Year 3. A. JOSEPH. Episcopal School of Jacksonville, 4455 Atlantic Boulevard, Jacksonville, Florida 32207. Email: mmjoseph@bellsouth.net

Rice is a globally important cereal crop, accounting for significant caloric intake of more than three billion humans. With the increase in the world population, the demand for rice will grow substantially. There are already many challenges to achieving higher rice production and quality, one of which is global warming and drought. Trehalose is a disaccharide present in *Escherichia coli* (*E. coli*), which increases markedly in response to heat shock and osmotic stress. In such environments, *E. coli* produces this sugar to help stabilize dehydrated enzymes, proteins, and lipid membranes efficiently. Therefore, the objective of this research is to increase the abiotic stress tolerance of rice by genetically engineering the *E. coli* trehalose biosynthetic genes (o*tsA* and o*tsB)* into rice. The *otsA* and o*tsB* genes were amplified from *E. coli* using PCR and cloned into the vector pSC. These genes were then sub-cloned into the binary vector pCmHU for rice transformation. This vector is compatible with *E. coli*, *Agrobacterium*, and *Oryza Sativa* (rice). *Agrobacterium*-mediated rice transformation was conducted using the resulting constructs. Some of the transformed calli are growing well on the selective media containing antibiotics, strongly suggesting that they carry *otsA* or *otsB* since the antibiotic resistant gene is linked to the trehalose producing genes. The transgenic and non-transgenic rice plants will be compared in their ability to produce trehalose and increase plant growth and rice production under various environmental stresses such as photo-oxidative damage in drought, and high and low temperatures.

E-2001

The Effect of Constrictor Prostanoids on PCOS- Induced Endothelial Dysfunction of Adult Female Rats. T. LEE. The University of Vermont College of Medicine. Department of Ob/Gyn, Research Division. Burlington, VT. Email: theophilalee@yahoo.com

The purpose of this experiment was to find the effect constricting prostanoids had on the endothelial dysfunction of adult female rats induced with PCOS (Polycystic Ovarian Syndrome). We selected 2 rats from the same litter and exposed them to the same conditions. The first rat, we used as a control. The second rat we implanted a DHT (dihydrotestosterone) pellet into a female rat, age 4 for 4–14 weeks to simulate the effects of PCOS. The vessels in the mesentery were then dissected, cannnulated, suspended in glass tubes, and pressurized to 50 mmHg. We tested the response of the control rat's vessel by constricting the vessel with phenolypherene, and then dilating it with acetylcholine to generate a sensitivity curve. We then tested the endothelial dysfunction of the rat implanted with the DHT pellet (using the same method), but found that the vessel only dilated about 50 % of the control. This proved the existence of endothelial dysfunction within the rat implanted with a DHT pellet. Therefore, the reason the PCOS vessel dilated less to acetylcholine was that there must have been a vasoconstrictor released that opposed vasodilation. The constrictor being released was a prostaglandin, therefore, we used indomethacin (which is a prostaglandin inhibitor) in hopes that it would restore normal dilation. The same setup was used: The vessel was constricted using phenolypherene and then dilated using acetylcholine. We then measured how much it dilated through a video electronic computer- based system. Eventually, it was found that when dilation was restored.

E-2002

Mislabeling in the Sushi Industry. SOHAIB SHAIKH. 198 College Hill Road, Hamilton College, Clinton, NY 13413. Email: sohaib@drshaikh.com

The mislabeling of sushi is prevalent because of the lack of legislation. The Federal Food, Drug and Cosmetic Act of 1938 defined a mislabeled food as one that is "offered for sale under the name of another food." Mislabeled food can be found in both restaurants and retail stores, but as restaurants purchase sushi from an outside source they can become victims of this fraud. Sushi samples were purchased from local stores and restaurants and DNA was isolated from the fish using standard materials e.g. β-mercaptoethanol, proteinase K, chloroform, isoamyl alcohol and phenol at the Hamilton College Molecular Biology Laboratory. After the isolation and purification of the DNA, samples were sent to GENEWIZ Laboratories for

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the sequencing of the 18S rDNA region. The DNA sequences obtained were cross-referenced against all other fish species in the National Institute of Health's Basic Local Alignment Search Tool. The results revealed that approximately 25 % of all sushi samples were mislabeled. At retail stores (Hannaford) 30 % of all samples collected were mislabeled. The most visible fraud was the mislabeling of *Oncorhynchus mykiss* (Rainbow Trout) as salmon. At restaurants (Mitsuba and the Asian Bistro and Grill) 45 % of all samples collected were mislabeled. The most visible fraud was the mislabeling of *Oreochromis niloticus* (red tilapia), *Lepidocyblum flavobrunneum* (escolar), *Paralichthys dentatus* (Summer Flounder) as red snapper, fluke, fatty tuna and white tuna, respectively. These results suggest that there is a significant consumer fraud in fish products and that a greater percentage of sushi is mislabeled in restaurants than retail stores. Such mislabeling is most likely the result of a desire for increased profits and unfavorable environmental conditions. This primarily occurs because of the shortage of fish such as salmon (which faces overfishing) and the red snapper (which is only found in the Gulf of Mexico and the southeastern Atlantic coast and has a high demand). Currently, this fish fraud still occurs because the FDA lacks the staff and the funding to enforce regulations.