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# BIOTECHNOLOGY CONFERENCE ..... A STEP AHEAD

Under the Patronage of

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## ABSTRACTS

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lower mean weight than the wild type and higher average sugar content. When grown in the soil and the transgenic leaves were different from the wild type with regard to morphology, morphology, modification, while higher average weight and lower average percentage of sugar than the wild type other

Western blotting showed that the transgenic leaf could bind lower level nicotine. Yellow vein virus (YVV) content in soil soil. It has proved that the transgenic *NPK* gene can significantly suppress viral reproduction in sugar beet plants, thus provided resistance to Rhizomania

**Keywords:** Transgenic beet, RFP, disease resistance, molecular breeding

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#### PO-58

*Track: Osho - Bioethanol*

### CADMIUM REMOVAL AND BIOETHANOL PRODUCTION FROM PHYTOREMEDIATION PLANT BY SIMULTANEOUS SACCHARIFICATION AND FERMENTATION (SSF)

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Natural processes such as volcanic eruptions, continental drifts and metal working industries lead to emission of heavy metals. These heavy metals are toxic because they cause DNA damage and their carcinogenic effects in animals and humans are probably caused by their mutagenic ability. Various engineering such as soil excavation, soil washing, or burning or pump and treat system are already being used to remediate metal contaminated soils. However, these techniques are not fully acceptable as they destroy the the biotic components of soil and are technically difficult and expensive to implement. Phyto remediation is an emerging technology, which uses plants to remove pollutants from contaminated sites

In this study, bioethanol production and cadmium removal from phyto remediation plant was investigated. We used the rice straw (*Oryza sativa* L.) for the remove of cadmium from contaminated sites. *Oryza sativa* L. was contained 80ppm of cadmium after phyto remediation treatment. When *Oryza sativa* L. was treated by 2% of sulfuric acid and enzymes, 75% of sugar yield and 90% of cadmium release were achieved. Furthermore, production of bioethanol from rice straw by simultaneous saccharification and fermentation (SSF) using *Schizosaccharomyces japonicus* was investigated. 15 (g/L) of bioethanol was produced after 30 hr.

**Keywords:** Cadmium, Bioethanol, phyto remediation

#### PO-69

*Track: Plant and Environment*

### CHEMOTHERAPEUTIC ACTION OF METHANOLIC EXTRACT OF THYMUS VILGARRIS LEAVE IN T. BRUCEI INFECTED RATS

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Current chemotherapeutic of African trypanosomiasis are beset with different problems including cost, toxicity and increasing resistance. Therefore, the search for new drugs and formulations that are safe, affordable and effective against both early and late stages of the disease is highly recommended. In this study, the efficacy of locally used medicinal spice *T. vilgarris* in the treatment of trypanosomiasis was investigated. Two different stages of infection were investigated and administered 500mg/kg body weight. The two groups were observed to show low rate of replication of parasite and extension of surviving days (8 days) than the infected not treated (6 days). Also, there was increase in the haemoglobin (Hb) concentration, packed cell volume (PCV), red blood cell (RBC), and white blood cell (WBC) of the



... studies when compared also to infected not treated group. Therefore, this investigation showed that *T. vaginalis* has immunological potentials by ameliorating the disease condition.

**Keywords:** *T. vaginalis*, Antitrypanosomal, haematological parameters

**PL-11**

Track: *Medical Biotechnology*

## ELECTROCHEMICAL DOSIMETRY OF GAMMA RAY EMITTED FROM THALLIUM-201 BY AMPEROMETRIC SUPEROXIDE ANION BIOSENSOR

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Exposure of aqueous media to ionizing radiation (radiolysis) such as  $\gamma$ -rays produces several reactive oxygen species such as superoxide, hydrogen peroxide, and so on that damage bio-molecules. In recent years, there has been renewal interest in the determination of these species including superoxide. In this work, at the first step an aqueous media was exposed to  $\gamma$ -rays radiation resulting in superoxide production. According to this fact, we prepared a cysteine modified electrode and applied it for detection of superoxide. For this purpose, cysteine self assembled monolayer-modified gold electrode (Cys Au) is used to detect of superoxide as a  $\gamma$ -ray produced reactive oxygen species from Thallium-201 ( $^{201}\text{Tl}$ ). The superoxide samples were produced by direct exposing the  $\gamma$ -ray source in phosphate buffer solution. The results showed that through measurement of superoxide produced by  $\gamma$ -ray source, the activity of ionizing radiation source can be estimated. In the presence of radioisotope, the amperometric detection of superoxide was designated as sensor response. At the applied potential of +250 mV (vs. Ag/AgCl), the developed sensor was able to detect the  $\gamma$ -ray in a linear range from 90  $\mu\text{Sv/h}$  to 1.25 mSv/h and a detection limit of 53  $\mu\text{Sv/h}$ . This approach could be useful to detect and dosimetry of gamma ray emitted from Thallium-201 to determination of superoxide.

**Keywords:** Thallium-201, Cysteine Gold electrode, Gamma ray, Dosimetry, Electrochemistry.

**PL-12**

Track: *Medical Biotechnology*

## OPTIMIZATION OF HUMAN INSULIN PRODUCTION PROCESS USING NEW IMPURITY BLOCKING METHOD

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Insulin is a peptide hormone which controls the glucose concentration in blood. The aim of this research is to improve the human insulin production by developing a commercially viable process. *Escherichia coli* JM109-pPT-H27Rpi was cultured by three-step temperature shift methods. It gave the final dry cell weight of 45 g/L and expression content of 69%. The purification steps were homogenization, inclusion body collection, refolding, and the enzyme reactions. The converted insulin was purified by cation-exchange and reverse-phase chromatography followed by crystallization. To block the formation of insulin derivatives and des-threonine insulin, hydrogen peroxide and citraconylation were used during the enzyme reaction. Combination of  $\text{H}_2\text{O}_2$  and citraconylation improved the insulin production yield to 50%. The overall yield of insulin from the enzyme reaction to final pharmaceutical ingredient was 0.48 g insulin was produced at cell concentration of 45 g dry cell weight/L. The purity of purified insulin was higher than 98.5%. Finally, the expression cell for human insulin was constructed. The fermentation and purification processes were optimized. The impurity blocking method, such as, hydrogen peroxide and citraconylation method were invented to allow the simple and cost-effective downstream process for production of human insulin.

