Plant Biology 2010

Montreal, Kanada

31 Julai - 4 Ogos 2010

Dr. T.P. Kannan
Pusat Pengajian Sains Pergigian

American Society of Plant Biologists

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June 8, 2010

Kannan P. Thirumulu
Universiti Sains Malaysia
School of Dental Health Campus
Kubang Kerian Kelantan
Kota Bharu 16150
MALAYSIA

Dear Dr. Thirumulu:

We have received your abstract titled "Evaluation of tualang honey as a supplement to fetal bovine serum in cell culture". On behalf of the American Society of Plant Biologists (ASPB) I wish to extend to you an official invitation to participate in the joint annual meeting of the American Society of Plant Biologists and the Canadian Society of Plant Physiologists/Société Canadienne de Physiologie Végétale, which will be held at the Palais des congrés de Montréal in Montréal, Canada on July 31-August 4, 2010. I would also advise you that this invitation does not include any financial support for your attendance.

If you will be traveling from outside the U.S. or Canada, please be advised that you must contact a Canadian visa office in your country as soon as possible to determine whether you need a Canadian visa. Furthermore, foreign nationals with flights connecting through U.S. cities may also require a U.S. visa. For U.S. citizens and those residing in the U.S. on a non-immigrant visa, there are new requirements for travel to Canada. Information on passport and visa requirements for Canada is available on the ASPB web site at http://www.aspb.org/meetings/pb-2010/canada.cfm .

There are many special events planned for this meeting in addition to the scientific symposia, minisymposia, poster sessions and workshops; I hope you will consider attending some of them.

I look forward to welcoming you to Montréal in July, 2010 and having you participate in the exchange of plant biology scientific information.

Plant Biology 2010

Bringing together the global community of plant biologists.

July 31 - August 4, 2010

Abstract Center . Session List . Itinerary . Search: Go

Poster: Genetics, Genomics, and Molecular Evolution

Abs #	Presenter	Title
P08111	Moore, Siobhan ☐ Add Itin.	Genetic variation for *Arabidopsis thaliana* heterotic responses is in large part explained by the epistatic interaction of flowering time genes FRIGIDA and Flowering Locus C.
P09001	Seo, Yong Weon ☐ Add Itin.	Antibiotic resistance of wheat in the form of 2BS/2RL translocations
P09002	Vining, Kelly ☐ Add Itin.	Genomic analysis of cytosine methylation in *Populus trichocarpa* tissues from differing developmental stages
P09003	Tan, Han-Qi ☐ Add Itin.	Saturating Barley Malting Quality QTLs with *Ac/Ds* Transposons
P09004	Matsushita, Starr C. ☐ Add Itin.	Chimeric aneuploids and their role in the evolution of early generation allopolyploids of *Arabidopsis*
P09005	Waters, Elizabeth R. ☐ Add Itin.	Comparative evolutionary analysis of the Hsp100/ClpB proteins in photosynthetic and non-photosynthetic lineages.
P09006	Jean, Martine ☐ Add Itin.	Anomalous segregation of DArT markers in barley doubled haploid populations
P09007	Jelesko, John G ☐ Add Itin.	Nicotine biosynthesis originated by ancient lateral gene transfer from diverse eubacterial phyla
P09008	Beilstein, Mark A. ☐ Add Itin.	The Age of Arabidopsis: dated molecular phylogenies indicate a Miocene origin for Arabidopsis
P09009	Zhang, Wei ☐ Add Itin.	Allelic variation among shoot maturation pathway genes regulates phenotypic diversity for vegetative phase change within maize populations
P09011	Seeve, Candace M. ☐ Add Itin.	Analyses of natural variation in gene expression & association genetics studies of stress-related genes in Loblolly pine (*Pinus taeda* L.)
P09012	Cooke, Janice EK ☐ Add Itin.	Molecular events during apical bud formation in white spruce
P09013	Sorensen, Iben	**Investigating the molecular mechanisms underlying the**

	☐ Add Itin.	Understanding biological and genetic factors influencing protein accumulation in transgenic maize seeds
P09068	Narsai, Reena ☐ Add Itin.	Common and distinct tissue and stress responsive transcriptomic patterns in *Oryza sativa* and *Arabidopsis thaliana*: A roadmap for translational research
P09069	Thirumulu, Kannan P ☐ Add Itin.	Evaluation of tualang honey as a supplement to fetal bovine serum in cell culture
P09070	Palle, Sreenath R ☐ Add Itin.	Gene expression analyses and association studies of wood development genes in loblolly pine (Pinus taeda L.)
P09071	Khanal, Sarita ☐ Add Itin.	Inheritance of folate content in dry beans (*Phaseolus vulgaris* L).
P09072	Lee, Mi Young ☐ Add Itin.	Development of a PCR-based assay for the detection of *Bupleurum longiradiatum* from other *Bupleurum* species
P09073	McCallum, Jason ☐ Add Itin.	**Genetic And Metabolites Diversity in Atlantic Canada Wild Roses And Its Implications In Drug And Cultivars Development**
P09074	Khanal, Raja ☐ Add Itin.	The Effect of Intermating on Trait Variation in Maize (Zea mays L.)
P09075	Gronwall, David S ☐ Add Itin.	Computer vision aided quantitative trait locus mapping of seed size and the gravitropic response in seedlings of *Arabidopsis thaliana*.
P09076	Noutsos, Christos ☐ Add Itin.	Population, Genetic and Phenotypic Differentiation of Aquilegia species in the Sierra Nevada

Add selected to Itinerary

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Poster: Genetics, Genomics, and Molecular Evolution

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Abs # P09069: Evaluation of tualang honey as a supplement to fetal bovine serum in cell culture

Presenter: Thirumulu, Kannan P *Contact Presenter*

Authors Thirumulu, Kannan P (A) Ali, Abdulaziz Qaid (A) Abdullah, Siti Fadilah (A) Ahmad, Azlina (A)

Affiliations: (A): Universiti Sains Malaysia

Though the use of honey in many medical fields has been established, its role in cell culture has not been reported yet. Hence, the aim of this study was to evaluate Tualang honey (manufactured by FAMA Negeri, Malaysia) as a supplement to fetal bovine serum (FBS) in cell cultures using MTT assay, chromosome aberration test and gene expression analyses. The growth factors contained in honey may reduce the usage of FBS, (which is obtained from animals) in culture media for in vitro cell and tissue culture. The MTT assay showed the highest percentage of cell proliferation (105.3% increment than control) of human osteoblast cell line (CRL 1543) in 0.0195% honey in Dulbecco's modified eagle medium supplemented with 10% FBS and 1% Penicillin/streptomycin. There was enhanced cell proliferation corresponding to the decrease in concentrations of honey as indicated by the mitotic index values when the osteoblast cell line was incubated at 37^0C for 48 hours. There were no chromosome aberrations both in the honey treated as well as distilled water treated (negative control) cell lines. In the case of gene expression analyses, fibroblast cell lines (CCL 171) were treated with honey (0.0195%) for 24 and 48 hours separately. Though there was over expression for the bcl-xl gene at both 24 and 48 hours, under expression for bcl-xs gene at 24 hours and over expression at 48 hours and under expression for both c-myc and p53 genes at both 24 and 48 hours, none of them were statistically significant in altering the expression of mRNA.