found three novel exonic polymorphisms (c.1-23T>C; c. 467 T>C, V15V; c.518C>A, K32K), one intronic polymorphism (c.121+11C>T, IVS3+11C>T, RS35135226) in exon 2 of SNCA gene. But in the exon 3 we did not observe any variation after sequencing. However, we could not completely exclude the possibility that the patients carry other mutations or rearrangements within SNCA gene, In the follow up of this study also a gene dosage studies, especially of SNCA and PARK2 genes have to be considered, in order to uncover possible larger genomic deletions/duplications.

Acknowledgement: This study was supported by GUK/494/2013.

http://dx.doi.org/10.1016/j.copbio.2013.05.303

Medicine & Biotechnology

Subcellular localization of HMGB1 and its receptor RAGE in normal and malignant tumour tissue

Jordana Raytcheva Todorova, Nora Kostova Koleva, Evdokia Alexandrova Pasheva

Institute of Molecular Biology, Bulgarian Academy of Sciences, Sofia, Bulgaria
E-mail address: jordanabg@yahoo.com (J.R. Todorova).

High Mobility Box 1 protein is a chromatin associated nuclear protein found in almost all eukaryotic cells. It is known as an important architectural factor that facilitates the assembly of site-specific DNA binding proteins to their cognate binding sites within chromatin. Thus it has been implicated in transcriptional regulation, DNA repair and recombination. Beyond this nuclear role, HMGB1 has been shown to be released passively by necrotic cells, and actively by macrophages/monocytes in response to inflammatory stimuli. There are several findings linking HMGB1 protein to cancer progression. Elevated expression of HMGB1 occurred in some primary tumors and in most cases HMGB1 is associated with invasion and metastasis. The main signaling pathway is accomplished through the interaction of HMGB1 with its Receptor for Advanced Glycation End products (RAGE). A few data suggest that its cellular localization is also important. We have studied different samples from primary hepatocellular tumor tissue and liver metastasis. In primary tumor cells RAGE is located predominantly in cytoplasm while in the metastatic cells it is mainly on the cell membrane. We also compared the level of HMGB1 and RAGE protein synthesis in normal rat organs and tumor tissue. We found out that in normal tissue the proteins are in their soluble form whereas in the tumor tissue they are predominantly in the membrane fractions.

Within all cases we detected increasing amount of HMGB1 and RAGE at tumor's samples. We suggest that there is a correlation between membrane localization of RAGE and HMGB1 and cell tumor potential.

http://dx.doi.org/10.1016/j.copbio.2013.05.304

Effects of carvacrol on the expression of genes involved in MAP-kinase pathway in Hep-G2 cells

Hülya Sivas, Emel Ergene, Özlem Tomsuk

Department of Biology, Faculty of Sciences, Anadolu University, Eskisehir, Turkey
E-mail address: hzeytino@anadolu.edu.tr (H. Sivas).

Carvacrol is a monoterpen as a major component of the essential oils from Labiatae family. Various biological activities including anticancer effect of carvacrol are well documented. However, molecular mechanisms underlying its effects are needed to be determined. Here, expression level of 84 genes involved in MAP-kinase pathway was investigated in a human hepatocarcinoma cells Hep-G2 exposured to carvacrol. After incubation of cells with carvacrol for 48 hours, their cDNA was prepared and then expression levels of genes were analyzed using RT-RT-PCR array. Effects of carvacrol on the expression of the genes were also investigated in human skin fibroblasts CRL-2120. According to the results, carvacrol treatment caused twofold or more decrease in the expression level of 21 genes (*ARAF*, *ATF2*, *BRAF*, *CCNA2*, *CCNB1*, *CCNB2*, *CCND1*, *CCND3*, *CCNE1*, *CDC42*, *CDK2*, *CDK6*, *CDKN1B*, *CDKN2C*, *CREB1*, *EGR1*, *FOS*, *MAP2K2*, *MAPK3*, *MST1* and *MYC*) involved in the MAP-kinase pathway in Hep-G2 cells. On the other hand, the effects of carvacrol were very little and also in a different way in normal CRL-2120 cells. Expression level of six genes was increased twofold and more. As a result, carvacrol caused cell death by decreasing the expression of some genes involved cell viability in cancerous cells whereas it caused small effect in normal cells, suggesting its safe use in cancer therapy.

http://dx.doi.org/10.1016/j.copbio.2013.05.305

Synthesis, antimicrobial activity and vibrational spectra OF 4-(2-pyridylazo) resorcinol monosodium and its complexes

Mustafa Kurt[1], Belgin Erdem[2], Sinem Zahide Korkut[3], Harun Ciftci[4]

[1] *Ahi Evran University, Physics Department, 40100 Kirsehir, Turkey*
[2] *Ahi Evran University, Biology Department, 40100 Kirsehir, Turkey*
[3] *Ahi Evran University, 40100 Kirsehir, Turkey*
[4] *Ahi Evran University, Chemistry Department, 40100 Kirsehir, Turkey*
E-mail address: mkurt55@gmail.com (M. Kurt).

In this study ML_2X_2 general formula of (M = Co,Cu; L = $C_{11}H_8N_3NaO_2$)×H_2O; X = Br,I,Cl) metal halogen compounds have been prepared for the first time. The FT-IR, FT-Raman, dispersive Raman spectra and elemental analysis of the prepared complexes were reported. The chemical formulas of complexes are determined by the elemental analysis results. The vibrational frequencies of the free ligand molecule were compared with those complexes. The frequency shifts between free ligand and coordinated ligand were investigated. In addition antimicrobial activities of free ligand molecule and its metal halide complexes were investigated. Free ligand and its complexes were found to be active against the tested bacteria.

http://dx.doi.org/10.1016/j.copbio.2013.05.306

Investigation of the presence of biofilm in *Bacillus subtilis*, *Bacillus licheniformis* and *Bacillus cereus* which are isolated from raw milks

Güven Uraz, Seda Teke Gündüz

Department of Biology, Faculty of Sciences, Gazi University, Teknikokullar, Ankara 06500, Turkey
E-mail address: guraz@gazi.edu.tr (G. Uraz).

In the present study, 50 raw milk samples was collected from dairy plants, and 22 *Bacillus subtilis*, 11 *Bacillus licheniformis*, 2 *Bacillus cereus* were isolated from this samples. These species were identified from BBL Crystal Identification System Gram-Positive ID Kit and then, the presence of biofilm was investigated. Crystal violet assay was performed to quantify the biofilm formation based on the value of optical density at 540 nm at 24 or 48 hours. As a result, it was determined that 19 *B. subtilis*, 10 *B. licheniformis* and two *B. cereus* formed biofilm at 24 hours. In addition it was determined