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Relationships Among Silence Climate, Employee Silence Behaviour and Work Attitudes: The Role of Self-Esteem and Locus of Control

Okey E. Amah and Chiwuba A. Okafor

Employee silence behaviour is a major impediment in organisations' attempt to leverage on the stock of knowledge in its diverse workforce. In order to contribute to the understanding of this concept, Dimitras and Vakola tested a silence behaviour model in which silence climate was found to affect the enactment of employees silence behaviour. The model tested in this study improved on this by accounting for the moderating role of self-esteem and locus of control and also indicating silence behaviour as both antecedent and outcome of work attitudes. Results obtained justify the recommended expansion. Recommendations are to always account for individual differences in silence behaviour model and apply system management in the application of the model. (*Asian Journal of Scientific Research 1 (1): 1-11, 2008; **doi:** 10.3923/ajsr.2008.1.11*)

The Effect of Feed Rate and Cutting Speed to Surface Roughness

A.B. Abdullah, L.Y. Chia and Z. Samad

In this study, a sensitivity analysis method was used to identify the optimal machining conditions with respect to surface quality. Presently, programming Turbo C++ is used to evaluate the properties of machined surfaces with cutting parameters using arbitrary sets of experimental values. Based on the proposed equations and its differentiated function, the quality of surface roughness can be known clearly through the sensitivities of proper local deviations. This method shows the sensitivity of each surface roughness to the machining parameters. The variables investigated were cutting speed (Vc), depth of cut (d), feed rate (fr) and the surface roughness (Ra). The result indicates that machining parameter that had the highest influence on surface roughness is the feed rate followed by the cutting speed and the depth of cut. Finally experiment analysis was carried out to verify the analytical results. (*Asian Journal of Scientific Research 1 (1): 12-21, 2008; **doi:** 10.3923/ajsr.2008.12.21*)

Consolidation of WC-Ni/W-Ni Double-Layer Composite by Infiltration of Cu-Sn-Ni-Mn as Binder in SILP Process

D. Miroud, M. Tata and S. Lebaili

In this study, two layers of loose powders' mixtures (WC-15% Ni and W-14% Ni) are consolidated by the infiltration of a nickel bronze alloy (Cu-6% Sn-9% Ni-5% Mn) to form a double-layer composite. We varied the granulometry of the powders in four classes. We are particularly interested in the densification at the level of the formed interfaces *in situ* on the basis of interactions between the binder and the mixtures of powders as well as in the effect of certain elements on the formed composite cohesion. Hardness profiles are established in the direction of the infiltration and microhardness tests on the phases resulting from solidification will consolidate the various microstructural observations. (*Asian Journal of Scientific Research 1 (1): 22-31, 2008; **doi**: 10.3923/ajsr.2008.22.31*)

Use of the Fuzzy Method for Determination of Sediment Balance and its Role on the Morphological Changes in Meandering Rivers

N. Javaheri, M. Ghomeshi and S.M. Kashefipour

In this study the basic theories of development of the meanders in rivers are described and categorised and the role of sediment balance on the morphological changes in these types of rivers is investigated using the fuzzy method. A supervised clustering fuzzy algorithm was applied to determine the sediment balance in a meandering river. The capability of the fuzzy method in recognition of the sediment transport trend was first checked using two analytical problems and the approved algorithm was then applied to recognise the trend of sediment transport and balance for Karoon River, the largest river in Iran. The predicted results obtained from the fuzzy model were compared with the sediment balance results for three sediment measuring sites along a 140 km reach of Karoon. This research has shown that the sediment balance along the research area was negative before construction of Karoon dam and as a result the bank erosion was continued at that period and after dam operation the sediment transport capacity of the river has decreased and now the river is in sedimentation conditions. The result of this research study was also that sedimentation occurs at the outer banks for this situation and as a result the river sinuosity index decreased and radius curvature of river increased. (*Asian Journal of Scientific Research 1 (1): 32-40, 2008; **doi**: 10.3923/ajsr.2008.32.40*)

Current Status of Olive Facilities in the District of Akhisar, Province of Manisa, Republic of Turkey

Aysun Tokmakoğlu and Meltem Sesli

In Akhisar district, olive culture dates back to many years; however, olives for consumption have been produced in small workshops for long years. It is observed that the workshops located in this region are converted into bigger and more modern constructions inclined towards industrialization approximately for the last 10 years. In this frame, a questionnaire study has been performed using the face-to-face interview method as addressed to establishments in order to determine the current status of olive facilities in the district of Akhisar and selected villages thereof. Questionnaire results have been evaluated with the help of the SPSS program. As a result of evaluation it is observed that there have been an increase in the number of establishments founded, especially in 1998; the establishments were small size, family owned establishments; the administrators and employees needed training especially on technical and marketing issues; the establishments predominantly produced periodically; their rates of capacity use increased; the causes for their inability to operate in full capacity included firstly the problems with regards to raw materials. It is also determined that the problems they encountered included chiefly the insufficiency of equity capital; their technology were up-to-date and presented advantage for competition but such technology should be renewed in parallel to the developments in the world. (*Asian Journal of Scientific Research 1 (1): 41-48, 2008;* **doi:** *10.3923/ajsr.2008.41.48*)

Measurement of Oil Palm LAI by Manual and LAI-2000 Method

M.A. Awal and W.I. Wan Ishak

In this study, accurate Leaf Area Index (LAI) of different palm age groups were determined by manual (direct) method. Optical methods for quantifying variation in LAI of different palm ages were evaluated using LAI-2000 Plant Canopy Analyser (PCA) as an indirect method. In the manual method, LAI values obtained were 0.69, 1.11, 2.38, 2.49, 3.41, 3.83, 4.05 and in the indirect method LAI values obtained were 1.75, 1.4, 1.14, 1.42, 2.87, 1.89, 3.05 for 2, 3, 6, 7, 9, 12 and 16 year old palms, respectively. Results showed that the PCA LAI

values were overestimated for immature palms but underestimated for mature palms. The PCA LAI values were overestimated by 30.8-153% for 2 to 3-year old palms and underestimated by 24-52% for beyond 6-year old palms as compared to manual measurement. The relationship between palm age and LAI was also established in this study. A strong linear relationship between direct LAI and palm age was observed with a correlation coefficient, $R = 0.90$. However, the relationship between PCA LAI and palm age was weak and not significant. A relationship was observed between PCA LAI and direct LAI with a correlation coefficient of $R = 0.57$. The study shows that it was possible to rapidly determine LAI using the LAI-2000 Plant Canopy Analyser. This rapid and non-destructive method saves labour when compared to manual measurements. However, this instrument gave inconsistent of LAI values in respect to oil palm age. (*Asian Journal of Scientific Research 1 (1): 49-56, 2008; **doi:** 10.3923/ajsr.2008.49.56*)

Structure and Floristic Composition of Tree Diversity in Tropical Dry Deciduous Forest of Eastern Ghats, Southern Andhra Pradesh, India

C. Sudhakar Reddy, Shilpa Babar, A. Giriraj, K. N. Reddy and K. Thulsi Rao

This study inventoried three tropical dry deciduous forest tree communities in Eastern Ghats of Southern Andhra Pradesh, India. Three 1 ha plots area were established one each in Nallamalais, Seshachalam and Nigidi hills. A total of 137 tree species, 2205 stems (735 ha^{-1}) of $\geq$ 10 cm girth were enumerated. Tree communities at the three sites differed in dominance, composition, diversity and structure. Tree stand density varied from 674 to 796 ha^{-1} with average basal area of 11.46 m^2 ha^{-1}. Shannon-Wiener index (H) ranges from 4.11 to 4.89. Site 1 is dominated by *Pterocarpus marsupium* (28.1) and *Anogeissus latifolia* (26.2), site 2 by *Pterocarpus santalinus* (44.5) and *Terminalia pallida* (42.4) and site 3 by *Chloroxylon swietenia* (46.2) and *Albizia amara* (25.9). Site 1 (Nallamalais) forests are more diverse at spatial scale and all taxonomic levels than their counterparts, due to high rainfall and favourable edaphic conditions. The present study can serve as baseline information for monitoring and sustaining the phytodiversity of tropical dry deciduous forests in the State of Andhra Pradesh. (*Asian Journal of Scientific Research 1 (1): 57-64, 2008; **doi:** 10.3923/ajsr.2008.57.64*)

Reasons Why Buses and Trains Are and Are Not Being Used More Extensively as Travel Mode in Malaysia

Abdullah Nurdden, Riza Atiq O.K. Rahmat and Amiruddin Ismail

The rise in population and motorization, however, has led to an increase in road traffic accidents. A shift away from car driving towards other safer modes is essential to reduce the number of road fatalities among car users. A cross-sectional survey among bus, car and train users were conducted to analyzes travelers' choice behavior in Malaysia. This study sought to identify the factors preventing own transport users from shifting to public transport and to develop model shift from car to public transport in order to formulate the policies to achieve this. A survey was carried out on users of private and public (both bus and urban train transport) using the Stated Preference (SP) and Revealed Preference (RP) techniques (n = 1200). A Multinomial logit models were developed for the three alternative modes, Car, Bus and Train. This study found that the most important variables found likely to encourage the use of public transport were higher parking charges, reduced travel time and subsidized fares. As expected, for the commuter to switch to public transport he would have to be incentivated to do so. (*Asian Journal of Scientific Research 1 (1): 65-71, 2008; **doi:** 10.3923/ajsr.2008.65.71*)

Light Interception and Productivity of Baby Corn as Influenced by Crop Geometry, Intercropping Systems and INM Practices

N. Thavaprakaash and K. Velayudham

Field experiments were conducted during kharif (June-September) 2002 and summer (March-May) 2003 seasons at Eastern Block farm, Tamil Nadu Agricultural University, Coimbatore. The experiments were laid out in split plot design with two factors in main plots viz., crop geometry ($45{\times}25$ cm (S_1) and $60{\times}19$ cm (S_2)) and intercropping systems [(sole baby corn (C_1), baby corn + *Amaranthus* (C_2) and baby corn + green gram (C_3)] and four INM practices [(100% recommended NPK (150:60:40 kg ha^{-1}) alone (N_1); 50% NPK + FYM + *Azospirillum* + phosphobacteria (N_2); 50% NPK of baby corn + Poultry manure + *Azospirillum* + phosphobacteria (N_3) and 50% NPK of baby corn + Goat manure + *Azospirillum* + phosphobacteria (N_4)] were allotted in sub plots. The results revealed that barring at 25 DAS, S_2 registered higher light interception than S_1. Intercropped baby corn recorded greater light interception than sole baby corn at 25 DAS and 45 DAS. The results at later stages were comparable. The

treatments N_3 and N_4 recorded higher light interception than N_1 and N_2. Similarly, higher green cob yield and Baby corn Equivalent Yield (BEY) registered at S_2 than S_1. Under intercropping situation, baby corn yield was not varied but BEY was significantly higher in C_2 and C_3 than C_1. Similar to light interception, baby corn yield and BEY were significantly higher with N_3 and N_4 than the rest. Strong positive and significant correlation between light interception and baby corn yield was noticed at all the stages except at 25 DAS during summer 2003 season. Whereas, the correlation between BEY and light interception was significant at 25 DAS during kharif 2002 and at 25 and 45 DAS during summer 2003 season. (*Asian Journal of Scientific Research 1 (1): 72-78, 2008; **doi:** 10.3923/ajsr.2008.72.78*)

Catalytic Oxidation of Carbonmonoxide Using Platinum Nanoparticles Synthesized in Microemulsion

O.P. Yadav, Y.K. Yadav, A.R. Das, Tania Dey, Shailja Kakkar and M.L. Singla

Platinum nanoparticles prepared by the interaction of Chloroplatinic acid (H_2PtCl_6). H_2O and hydrazine hydrate $(N_2H_4.H_2O)$ in water-in-oil microemulsion [Polyoxyethylene-4-dodecylether $(C_{12}E_4)$ + Cyclohexane (C_6H_{12}) + Water (H_2O)] in the absence and presence of poly(N-vinylpyrrolidone) (PVP) and Polyethylene Glycol (PEG) have been characterized using X-Ray diffraction (XRD), electron diffraction and transmission Electron Microscopy (TEM) techniques. Platinum nanoparticles adsorbed on alumina converted CO to CO_2 at much lower temperature (245°C) compared to 325°C when pure alumina was used as catalyst. The catalytic activity of the synthesized nanoparticles in microemulsion containing PVP, examined in terms of CO to CO_2 conversion reaction as a function of temperature exhibit higher catalytic efficiency compared with those synthesized in the microemulsion without PVP and microemulsion-PEG systems. (*Asian Journal of Scientific Research 1 (1): 79-84, 2008; **doi:** 10.3923/ajsr.2008.79.84*)

Seroprevalence of *Morbillivirus* Antibody and Abattoir Survey of One Humped Slaughtered Camels (*Camelus dramedarius*) in Maiduguri Municipal Abattoir Maiduguri, Nigeria

M.B. Abubakar, A.B. Sanda, A.D. EL-Yuguda and S.S. Baba

Retrospective survey for prevalence of *Morbillivirus* antibody was carried out in 400 camels slaughtered in Maiduguri municipal abattoir using Complement

Fixation Test (CFT). The results of the retrospective study showed that complement fixing antibodies to *Morbillivirus* were prevalent in the slaughtered camels tested. An overall prevalence rate 154 (38.5%) of morbillvirus antibodies was found among the animals screened, 232 (58%) showed evidence of anti-complementary activities and 14 (3.5%) were negative. The survey of slaughtered camels in the municipal abattoir revealed increased camel importation during the months of April to May which coincided with the prolonged hot-dry season in the study area. The rainy season which coincided with the months of July to September is characterized by a decrease in the number of imported camels to Nigeria. It is therefore important that camels be included among the group of animals to be monitored for the activities of *Morbillivirus* like RPV/PPRV and to define their role in the epidemiology of the disease in Nigeria and elsewhere. (*Asian Journal of Scientific Research 1 (1): 85-89, 2008;* **doi:** *10.3923/ajsr.2008.85.89*)

Strategic Planning for Fault-Tolerant Internet Connectivity Using Basic Fault-Tolerant Architectural Design as Platform

O.O. Adeosun, E.R. Adagunodo, I.A. Adetunde and T.H. Adeosun

Present focus in this study is to provide Internet connectivity without any interruption even at the presence of faults/failures thereby enhancing Internet services performance. To achieve this, the deployment and redeployment of faulty component(s) are done using Basic Fault-Tolerant (BFT) architectural design. A framework to provide enhanced performance in terms of confidentiality, integrity and availability in clusters is suggested using BFT, considering all sources of vulnerabilities including operating system/software, communication hardware, user-level communication and network protocols. (*Asian Journal of Scientific Research 1 (2): 90-102, 2008;* **doi:** *10.3923/ajsr.2008.90.102*)

Development Potential of Olive Production Establishments in Akhisar-Manisa-Turkey

Cevdet A. Kayali, Aysun Tokmakoglu, Meltem Sesli and Nilgün Tille Kayali

In Turkish economy, agriculture as well as the production and exportation of industrial products based on agriculture have a significant contribution in country economy. These agricultural products mainly include olive and olive oil. Majority of olive production in Turkey is in the Aegean Region. There are 10 million olive trees in Akhisar district of Manisa as located in the Aegean Region. In Turkey,

olive sector for consumption consists of very small family owned establishments. Olive establishments in Akhisar are also in such a structure; however, big and modern establishments started to become widespread and olive exportation developed every day as of 1990s. In this framework, a questionnaire study was performed through face to face interviewing method directed towards administrations in order to determine the current status of olive establishments in the district of Akhisar and selected villages. Results of questionnaires were evaluated by means of SPSS program. In conclusion to this evaluation, it was determined that 73% of establishments produced under their own brand; 16% thereof had regular and continuous research and development unit; the establishments distributed their products generally by means of wholesalers; they set their prices in accordance with costs; introduction activities were realized with product samples; approximately half of the establishments were working only for the domestic market; the other half were working both for the domestic and the foreign market; exportation potential was affected by the competing price advantage; the biggest problem in exportation was financing; and that it was necessary to improve product quality standards and to support the establishments with governmental assistance increasing the competitive power bin order to develop the olive business sector. (*Asian Journal of Scientific Research 1 (2): 103-112, 2008;* **doi:** *10.3923/ajsr.2008.103.112*)

The Influence of Media Concentrations on the Passivation Layer Characteristics of Al-Zn Alloys in Brine Environment

C.E. Ekuma, N.E. Idenyi, F.K. Onwu and A.E. Umahi

Corrosion tests were carried out on locally processed aluminum-based alloys with varying weight percentages of zinc. Test coupons of dimensions $17 \times 16.8 \times 15$ mm were machined from the as-cast alloy to an average surface area of 1271 mm^2. The coupons were immersed in 0.1, 0.25, 0.5 and 1.0 M NaCl solutions with a coupon withdrawn simultaneously from each medium at 24 hourly rate for characterization. The results revealed that the coupons gained weight in all the media indicating the phenomenon of passivation; with the greatest layer thickness observed in the range 0.25 to 0.5 M brine. This behavior is attributed to the increasing electrical conductivity of the solutions; a consequence of increasing solubility of the media which progressively increased peaking within this range and hence, increased passivation kinetics before declining due to the immobility of current carrying ions. (*Asian Journal of Scientific Research 1 (2): 113-121, 2008;* **doi:** *10.3923/ajsr.2008.113.121*)

Genotoxic Potential of Agricultural Soils of Amritsar

J.K. Katnoria, S. Arora and A. Nagpal

The present study was planned to estimate the content of some heavy metals and evaluate the genotoxic potential of extracts of soil samples collected from different agricultural fields of Amritsar, India, employing Ames test and *Allium cepa* root anaphase aberration assay (Al-RAAA). The water extraction of soil samples was carried out using distilled water (soil: water, 1:2 w/v). The extracts were evaporated to dryness and redissolved in distilled water to prepare different concentrations corresponding to 0.25, 0.5, 1.0, 2.0 and 2.5 g equivalent of soil per plate and were used with *Salmonella typhimurium* TA98 and TA100 strains, with and without *in vitro* metabolic activation (S9) to detect direct and indirect mutagenic effects. For Al-RAAA, different concentrations of extracts (10, 25, 50, 75 and 100%) were used for treatment of root tips of *A. cepa. In situ* conditions were also simulated by allowing the onion bulbs to root directly in soil samples contained in small pots. The genotoxic potential of soil samples was correlated with content of heavy metals like Chromium, cobalt, copper, manganese, mercury, nickel and zinc. The pH, alkalinity, water holding capacity, bulk density, moisture content, nitrates, phosphates and potassium were also studied. It was observed that soil samples, which showed the highest percentage of aberrations, also contained higher concentrations of one or more metals studied. (*Asian Journal of Scientific Research 1 (2): 122-129, 2008; **doi:** 10.3923/ajsr.2008.122.129*)

Detection of Outliers in Time Series Data: A Frequency Domain Approach

O.I. Shittu and D.K. Shangodoyin

We consider the identification and detection of outliers in frequency domain using the spectral method. By assuming both the additive and multiplicative effect of outliers on a series, the parameters of the model were estimated using the maximum likelihood method with a view to measuring the effect of the suspected outlier on the parameter of the series. The occurrence of outliers has led to a shift in the phase and amplitude of the Fourier series thus affected the periodogram estimates. Further more, detection of aberrant observations is more exact in the frequency domain than in the time domain. (*Asian Journal of Scientific Research 1 (2): 130-137, 2008; **doi:** 10.3923/ajsr.2008.130.137*)

A Memetic Algorithm Approach for Minimizing Exceptional Elements in Cell Formation

R. Sivaprakasam and V. Selladurai

Cellular Manufacturing System (CMS) is an application of Group Technology (GT) in which similar parts and machines are grouped into part families and machine cells. In this study, a metaheuristic called Memetic Algorithm (MA) is introduced to solve the machine cell formation problem. This study is conducted to minimize the intercellular movement of parts known as exceptional elements. MA is incorporated using Genetic Algorithm (GA) and Tabu Search (TS) Algorithm. In the MA approach, local optimization (TS) is applied to each newly generated offspring at the end of genetic algorithm. The MA is tested on a number of problems of various sizes and its performance is evaluated. The results obtained by MA are highly comparable with an objective obtained by Metaheuristics GA, TS and there is a considerable reduction in computational effort. (*Asian Journal of Scientific Research 1 (2): 138-145, 2008;* ***doi:*** *10.3923/ajsr.2008.138.145*)

Quality Function Deployment in Agile Parallel Machine Scheduling Through Neural Network Technique

S. Venkatachalam, C. Arumugam, K. Raja and V. Selladurai

Any manufacturing system has to attain key performance measures for its successful operation. Quality Function Deployment (QFD) is to convert the customer requirements into quality characteristics and develop a schedule for the jobs by systematically deploying the relationships between the due date and the completion time by adopting the just in time concept. Non-traditional optimization technique such as Neural Network (NN) technique provides a complete solution methodology for solving the shop floor scheduling problems. The problem considered in this study is to schedule different number of jobs on parallel machines with the objective of reducing the multiple objectives such as the earliness, the tardiness and the completion time of the jobs. All the objectives have been assigned with weights so that the priority of the objectives could be varied. It has been found that the proposed method simultaneously reduces all the performance measures considerably, thereby outperforming the existing heuristics. (*Asian Journal of Scientific Research 1 (2): 146-152, 2008;* ***doi:*** *10.3923/ajsr.2008.146.152*)

Response of Crop Geometry, Intercropping Systems and INMPractices on Yield and Fodder Quality of Baby Corn

N. Thavaprakaash, K. Velayudham and V.B. Muthukumar

Field experiments were conducted during late rabi 2002 and 2003 seasons at Eastern Block farm of Tamil Nadu Agricultural University, Coimbatore, India. The texture of the experimental fields is sandy clay loam. The experiments were laid out in split plot design. Two factors viz., crop geometry (45×25 cm (S_1) and 60×19 cm (S_2)) and intercropping systems (Baby corn alone (C_1), Baby corn+radish (C_2), Baby corn+coriander (C_3)) were taken in main plots and four INM practices (100% recommended NPK alone (N_1); 50% NPK+ FYM + *Azospirillum*+phosphobacteria (N_2); 50% NPK+poultry manure + *Azospirillum* + phosphobacteria (N_3) and 50% NPK + goat manure + *Azospirillum* + phosphobacteria (N_4)) were assigned to sub plots. The experimental results revealed that baby corn and fodder yields were higher at 60×19 cm spacing level as compared with S_1. Intercropping systems did not influence on baby corn and fodder yields. The treatments N_3 and N_4 registered higher baby corn and fodder yields than N_1 and N_2. Neither crop geometry nor intercropping systems did influence on fodder quality of baby corn. All the three INM practices (N_2, N_3 and N_4) recorded higher values of quality parameters than N_1. However, N_3 and N_4 values were significantly higher than N_2. (*Asian Journal of Scientific Research 1 (2): 153-159, 2008; **doi**: 10.3923/ajsr.2008.153.159*)

HPLC Separation of Phytoalexins from *Phaseolus vulgaris* Treated with Elicitor from *Colletotrichum lindemuthianum*

Fatima Bi, Muhammad Arman and Seema Iqbal

Induced secondary metabolites produced in *Phaseolus vulgaris* tissues on treatment with partially purified elicitor preparations PPF- I and PPF-2 of *Colletotrichum lindemuthianum* were extracted with 95% alcohol and analyzed by high performance liquid chromatography. Separation was achieved on a reverse phase column on spherisorb 5 ODS 2 by gradient elution. Significant differences were observed in timing and level of induced secondary metabolites in response to various dilutions of elicitor. Hundred micro gram glucose eq mL^{-1} elicitor concentrations of both fractions was found effective and induced high level of metabolites at 24 h of incubation of treated tissues of *Phaseolus vulgaris*. (*Asian Journal of Scientific Research 1 (2): 160-165, 2008; **doi**: 10.3923/ajsr.2008.160.165*)

Mineral Content of Some Seaweeds from Sabah's South China Sea

Duduku Krishnaiah, Rosalam Sarbatly, D.M.R. Prasad and Awang Bono

The mineral content of some species *Caulerpa, Ulva, Sargassum, Eucheuma, Gracilaria, Gelidiella* and *Kappaphycus* was investigated. These are the major variety of seaweeds available in Sabah South China Sea (Malaysia) and contained high proportions of ash content (20.56- 40.5%). The green and brown seaweeds ash content (37.27-40.5%) was higher than the red seaweeds (20.56-22.41%). The iron content was rich in the sequence of *Gelidiella>Caulerpa> Sargassum> Euch*euma and its range was found to be 6.6-10.94 mg/100 g dry weight. The major seasonal deviation was found to be 9.25% Mg, 6.44% Ca and 5.3% Fe. This study was conducted to create a nutritional data for consumption and utilization in the industry. (*Asian Journal of Scientific Research 1 (2): 166-170, 2008;* **doi:** *10.3923/ajsr.2008.166.170*)

Excretory-Secretory Antigens are Better than Crude Antigens for Serodiagnosis of *Haemonchus contortus*

R.A. Mir, M.Z. Chishti, M.A. Zargar, Hidayatullah Tak and S.A. Ganie

Serodiagnosis of *Haemonchus contortus* by ELISA using adult crude somatic and excretory-secretory antigens of *Haemonchus contortus* was tested in the present study. The diagnostic sensitivity of ELISA using excretory secretory antigens was 87.5% which was significantly higher compared to crude somatic antigen 72.22%. Mean ELISA absorbance value of excretory-secretory antigens was significantly higher corresponding to crude somatic antigens. Excretory secretory antigens showed 92.02% specificity compared to 76.81% of crude somatic antigens (p<0.05). The results revealed that excretory secretory antigens are very sensitive and may be useful as a supplementary method for diagnosis of Haemonchosis in ruminants. (*Asian Journal of Scientific Research 1 (2): 171-175, 2008;* **doi:** *10.3923/ajsr.2008.171.175*)

A New Method of Isolation of Isoflavones from *Glycine max* (Soya Beans) by Complexation Technique

Priya R. Rao, K. Girish Kumar and Manoj C. Narayanan

The technique of complexation was used to prepare isoflavones-enriched soya extract and to isolate genistein, from soya bean extract. The finding shows

that isoflavones, in the extracts, form stable complexes with metals. This can be used as a novel method for isolation of flavonoids from plant sources. (*Asian Journal of Scientific Research 1 (2): 176-179, 2008;* **doi:** *10.3923/ajsr.2008.176.179*)

Subsurface Porous Pipe Irrigation with Vertical Option as a Suitable Irrigation Method for Light Soils

A.M. Akhoond-Ail and M. Golabi

The main aims of current study are testing a new idea of vertical installation of porous pipe instead of horizontal installation, leading irrigated water down according to root depth, minimizing evaporation from soil surface and preventing deep percolation. This system was designed for three lengths of porous pipe (30, 45 and 60 cm) with three water heads of 2, 4 and 6 m and for a maximum irrigation duration of 300 min. The experimental results showed vertical expansion of soil moisture to the extent of 200% of porous pipe length in all treatments. However, acceptable horizontal expansion of soil moisture was recorded only for application of 6 m of water head. The produced soil moisture content by this system was shown in a range between 14.8 and 17.4% (w/w), which is around field capacity water content. Therefore, it can support plant growth in effective manner. (*Asian Journal of Scientific Research 1 (3): 180-192, 2008;* **doi:** *10.3923/ajsr.2008.180.192*)

Boundary Condition Effect on Dynamic Behaviour of a Uniform Straight Composite and Isotropic Beam Due to Moving Force

Kambiz Bakhshandeh and Bahador Saranjam

In this study, the impact of boundary condition in dynamic behaviour of a straight beam under action of moving force is investigated. Furthermore, the effectiveness of various parameters such as beam geometry and material type on dynamic magnification factor is studied. This study shows that maximum dynamic magnification factor only depends on boundary condition. This value is obtained at a critical to moving load velocity ratio that is independent of material and beam geometry and only depends on boundary condition. The Maximum dynamic magnification factor for composite and isotropic material in each boundary condition is slightly different. (*Asian Journal of Scientific Research 1 (3): 193-202, 2008;* **doi:** *10.3923/ajsr.2008.193.202*)

The Effect of β in Kaiser Window on the SNR of MST Radar Signals

G.H. Reddy, Y. Venkatarami Reddy and S.N. Reddy

In this study, the effect of parameter β in Kaiser Window on the SNR values of MST radar echoes is investigated. Use is made of six sets of multibeam observations of the lower atmosphere made by the Indian Mesosphere-Stratosphere-Troposphere (MST) radar. The effects of data weighting with the variation in the parameter β of the Kaiser window applied to the inphase and quadrature components of the radar echo samples prior to Fourier transformation are presented. It is observed that the increase of β, increases the SNR in the higher bins and a good improvement is reported. At the same time in the lower bins a slight decrease in SNR is observed. From these observations, it is concluded that the Kaiser window can be used with β greater than or equal to 6, to taper the data for spectral analysis in place of a rectangular window. The results also show that, the improvement of SNR of noisy data due to the effect of side lobe reduction and demands for the design of optimal windows. (*Asian Journal of Scientific Research 1 (3): 203-212, 2008; doi: 10.3923/ajsr.2008.203.212*)

Computation of the Scattering Parameters Using Indian Lognormal Drop Size Distribution at 16, 19.3 and 34.8 GHz for Spherical and Oblate Spheroidal Rain Models

Sikiru Adekola

bstract: Calculations of Millimeter-wave rain scattering parameters are made at 16, 19.3 and 34.8 using spherical and oblate spheroidal rain models. Computations are made at angle of incidence of 0 and 90° for the oblate spheroidal rain model. The characteristic of the difference between the two models with rain rate are studied at incidence angle of 0° to allow us determine their suitability in a tropical environment. Some propagation parameters are evaluated using the Indian lognormal and Marshall and Palmer (MP) Drop Size Distributions (DSD's). Marshall and Palmer DSD model could underestimate rain-induced attenuation at all the frequencies in the rain rate range of $0.25 \leq R < 50$ mm h^{-1} and overestimate specific phase shift at rain rate $R > 100$ mm h^{-1} if adopted for radio wave propagation prediction on tropical path. However, Indian data compare well with MP at rain rate in the range $50 \leq R \leq 100$ mm h^{-1}. Similarly, spherical rain model could underestimate the specific attenuation with a maximum margin of 3.4 dB km^{-1} at 34.8 GHz and specific phase shift of 15.7° km^{-1} at 16 GHz, both at rain

rate of 150 mm h^{-1}. The empirical scaling relationship between the radar reflectivity η and rain rate R (η = aR^b) are derived for the Indian DSD and the coefficients a and b compare well with those of Aydin and Lure. (*Asian Journal of Scientific Research 1 (3): 213-221, 2008; **doi:** 10.3923/ajsr.2008.213.221*)

Investigating of Tool Wear, Tool Life and Surface Roughness When Machining of Nickel Alloy 242 with Using of Different Cutting Tools

H.H. Habeeb, K.A. Abou-El-Hossein, Bashir Mohamad, Jahara A. Ghani and K. Kadirgama

This study discusses about behavior of cutting tools in term of tool wear, tool life and surface roughness integrity when machining of nickel based alloys 242. Experimental tests were conducted using four different cutting tool materials under wet condition. They are TiAlN, TiCN/TiN, TiAlN/TiN (PVD) and TiCN/Al$_2$O$_3$ (CVD). Tool failure modes and wear mechanism for all cutting tools were examined at various cutting parameters. Flank wear was found to be the predominant tool wear for the four types of cutting tools especially with CVD tools. Coating is observed to be delaminated as main phenomena on all cutting tools surfaces. The obtained results have indicated that PVD cutting tools perform better than CVD cutting tools. The thickness of coating layers for CVD is thicker than PVD. Finite Element Analysis (FEA) is used to support this study in term of analysis of cutting tool deformation and cutting temperature. (*Asian Journal of Scientific Research 1 (3): 222-230, 2008; **doi:** 10.3923/ajsr.2008.222.230*)

A Global Solar Radiation Model for the Design of Solar Energy Systems

Ridha Fethi Mechlouch and Ammar Ben Brahim

In order to obtain the global solar radiation for practical applications, a mathematical model was developed in this study. The experimental data for five years were correlated in order to calculate the model parameters. Knowing the values of cloudiness degree k, Julian date N, the global solar radiation can be estimated at any hour t by the developed model. We have testing this model at different periods of two years and at different cloudiness degree classes, in the second a monthly global solar radiation was estimated and compared with the results of Sivkov model. To evaluate the accuracy of the model, three methods are used, RMSE, MPE and MBE. The mean monthly and yearly global radiation was

estimated with an accuracy of 4.5 and 0.34%, respectively. The prediction results were found to be in good agreement with the experimental data can be employed for estimating global solar radiation for the south of Tunisia. (*Asian Journal of Scientific Research 1 (3): 231-238, 2008; **doi:** 10.3923/ajsr.2008.231.238*)

Impact of Physical Disturbance on the Community Structure of Estuarine Benthic Meiofauna

Eldose P. Mani, B. Ravikumar, P.J. Antony, P.S. Lyla and S. Ajmal Khan

As part of the environmental impact assessment studies of brackish water aquaculture, the effect of benthic disturbance caused by manual removal of overlying sediment near to the suction sump of an aquaculture pond was studied in the Vellar estuary. The abundance and vertical distribution of meiofauna before and after disturbance were compared. Sediment core and water samples from the pre-and post-disturbance stages were analyzed for meiofaunal abundance, TOC, texture, porosity and physicochemical parameters. Immediately after one day of the benthic disturbance, a drastic decrease in meiofaunal numbers was observed, indicating the deleterious effect of disturbance. On the other hand considerable increase in TOC and meiofaunal numbers from the adjacent sites was observed vouching for the positive impact of such disturbances. (*Asian Journal of Scientific Research 1 (3): 239-245, 2008; **doi:** 10.3923/ajsr.2008.239.245*)

Effect of *Clerodendron inerme* on Erythrocyte embrane Integrity During 7,12-dimethylbenz(a)anthracene Induced Skin Carcinogenesis in Swiss Albino Mice

K. Rajalingam, G.L. Renju, S. Balakrishnan and S. Manoharan

Aim was to investigate the modifying effects of ethanolic extract of *Clerodendron inerme* leaves on membrane integrity by measuring the levels of plasma and erythrocyte membrane glycoconjugates and red blood cell osmotic fragility during 7,12-dimethylbenz(a)anthracene (DMBA) induced skin carcinogenesis in Swiss albino mice. The skin squamous cell carcinoma was induced in the shaved back of mice, by painting with DMBA (25 µg/0.1 mL acetone) twice weekly for 8 weeks. We have observed 100% tumor formation in the fifteenth week of experimental period. The status of glycoconjugates in plasma and erythrocyte membrane and red blood cell osmotic fragility was assayed by using specific colorimetric methods. The levels of glycoconjugates were increased in plasma whereas decreased in erythrocyte membrane of DMBA treated animals as

compared to control animals. Red blood cells from tumor bearing animals were more fragile than those from control animals. Oral administration of ethanolic leaf extract of *Clerodendron inerme* (CILEE) 300 mg kg^{-1} b.wt. significantly prevented the tumor formation as well as restored the status of glycoconjugates and red blood cell osmotic fragility in DMBA treated animals. The present study thus demonstrates the protective effect of CILEE on red blood cell membrane integrity during DMBA induced mouse skin carcinogenesis. (*Asian Journal of Scientific Research 1 (3): 246-255, 2008;* **doi:** *10.3923/ajsr.2008.246.255*)

Surface Roughness Prediction Techniques for CNC Turning

B. Sidda Reddy, G. Padmanabhan and K. Vijay Kumar Reddy

This study deals with the development of a surface roughness prediction model for machining aluminum alloys using multiple regression and artificial neural networks. The experiments have been conducted using full factorial design in the design of experiments (DOE) on CNC turning machine with carbide cutting tool. A second order multiple regression model in terms of machining parameters has been developed for the prediction of surface roughness. The adequacy of the developed model is verified by using co-efficient of determination, analysis of variance (ANOVA), residual analysis and also the neural network model has been developed using multilayer perception back propagation algorithm using train data and tested using test data. To judge the efficiency and ability of the model to predict surface roughness values percentage deviation and average percentage deviation has been used. The experimental results show, artificial neural network model predicts with high accuracy compared with multiple regression model. (*Asian Journal of Scientific Research 1 (3): 256-264, 2008;* **doi:** *10.3923/ajsr.2008.256.264*)

Shared Values and Organizational Performance of Nigerian Companies: An Empirical Analysis

Chinwuba Okafor

In this study, an attempt is made to demonstrate the relationship between shared values and organizational performance. With data from randomly selected companies quoted on the 1st tier of the Nigerian Stock Exchange (NSE), this study empirically established, using the ordinary least square, a positive relationship between shared values and organizational performance. The practical implication of this finding is that the value system of an organization impacts positively on

organizational performance. Consequently, the paper calls for an improvement in the communication and sharedness of organizational values among organization members. (*Asian Journal of Scientific Research 1 (3): 265-273, 2008; doi: 10.3923/ajsr.2008.265.273*)

Low Harmonics Single Phase Multilevel Power Inverter

S.M. Bashi, N. Mariun, N.F. Mailah and S. Alhalali

This study deals with the simulation and development of a single phase multilevel inverter. The aim of the study is to investigate the performance and features of transformer and transformer-less multilevel inverters. In order to generate sinusoidal wave with minimum THD, harmonic elimination method has been used to calculate conducting angle of each H-bridge. This generates the output waveform with certain voltage and low THD. PIC microcontroller has been used to generate the signals required to operate the system. The proposed circuit was simulated using Pspice/Orcad and the results were compared with the hardware experimental results and a good agreement has been found between simulation and laboratory results. (*Asian Journal of Scientific Research 1 (3): 274-280, 2008; doi: 10.3923/ajsr.2008.274.280*)

Effect of FSH+LH (Pergonal®) Treatments on Hormonal Profile and Superovulatory Response of West African Dwarf Does

F.C. Iheukwumere, A.H. Abu and I.C. Okoli

The effect of the administration of varying doses of FSH+LH (Pergonal®, Ferring Labs, USA) was used on 16 clinically, sound, parous, West African dwarf does aged 2-3 years to evaluate the hormonal profiles and superovulatory responses. Four treatment groups were employed consisting of T_1 (administered with physiological saline as the control), T_2, T_3 and T_4 given 19.0 IU, 58.0 IU and 82.0 IU FSH+LH, respectively, as intramuscular injections over 3 days. The results on the number of corpora lutea found on the ovary did not show any significant difference ($p>0.05$) between goats on T_2 (5.25 ± 2.74) T_3 (6.25 ± 2.13) and T_4 (6.50 ± 2.74). However, they differed significantly ($p<0.05$) from goats on T_1 (3.75 ± 0.30) in the number of corpora lutea on the ovary. The number of embryos recovered was not significantly different ($p>0.05$) between goats on T_2 (4.50 ± 0.93), T_3 (4.70 ± 0.86) and T_4 (4.75 ± 1.27). However, they differed significantly ($p<0.05$) from goats on T_1 (2.25 ± 0.01) in number of embryos recovered. Goats treated on T_2 with embryo recovery rate ($78.30\pm0.18\%$) did

not differ significantly (p>0.05) from goats on T_3 (75.20±0.14%) and T_4 (73.10±0.06%). However, they differed significantly (p<0.05) from goats on T_1 (60.00±0.02%). The ova/embryo wastage was not significantly different (p>0.05) between goats on T_2 (21.70±0.30%), T_3 (27.80±0.12%) and T_4 (26.90±0.16%). However, they differed significantly (p<0.05) from goats on T_1 (40.00±0.01%) in embryo wastage. LH and FSH were highest at T_3 treatment group with values of (3.60±0.02 and 3.13±0.14 (IU L^{-1}), respectively. Progesterone and Oestradiol showed higher values on T_4 goats with (16.17±1.01 and 0.26±0.41 nmmol L^{-1}), respectively. The results of this study indicate that the administration of FSH+LH enhanced embryo production and hormonal levels in West African dwarf goats. (*Asian Journal of Scientific Research 1 (3): 281-287, 2008;* **doi:** *10.3923/ajsr.2008.281.287*)

Preparative Separation of Isoflavones from Korean Soybean by HPLC

K.J. Lee, K.H. Row and In-Chul, Jun

In this study, analytical and preparative HPLC systems were utilized to obtain isoflavones from Korean soybean. The mobile phases were the ternary system of water/acetonitrile/acetic acid. The optimum operating conditions were experimentally determined with the analytical column (C_{18}, 0.46×25 cm 5 micron and the preparative column packed with 15 micron. The experimental variables were the gradient conditions and mobile phase composition. The aglycones isoflavones of daidzein, glycitein and genistein were isolated and identified. The yield of solid extract was 5%, while the weight percentage of genistin, daidzein and genistein was 0.2 wt.%. It was found that the total amount of the aglycone isoflavones of daidzein and genistein extracted from the Korean soybean was 23.18 µg g^{-1}. (*Asian Journal of Scientific Research 1 (3): 288-292, 2008;* **doi:** *10.3923/ajsr.2008.288.292*)

Bionic Wavelet Transform Based on Speech Processing Dedicated to a Fully Programmable Stimulation Strategy for Cochlear Prostheses

Amira Derbel, Fathi Kallel, Mounir Samet and Ahmed Ben Hamida

This study presents a Digital Speech Processing algorithm based respectively on Continuous Wavelet Transform (CWT) and Bionic Wavelet Transform (BWT), which are applied for cochlear prostheses to stimulate properly cochlea's nervous

cells of totally or even profoundly deaf patients. In fact, BWT is a new time-frequency analysis method recently proposed in the biomedical engineering field. It is based on active cochlear model introduced into CWT. BWT has proven to be meaningful in cochlear implant research. A twenty one filters banc based, respectively on Bionic and Continuous Wavelet Transform using Munich basic function was designed. The input signal could be then divided into twenty one bands according to ERB model (Equivalent Rectangular Bandwidth) which is similar to active auditory model. Strategy performances were evaluated using different input signals like pure and composite sounds and real speech signals extracted from TIMIT database. One comparison study between these two algorithms shows that BWT performs better than CWT for speech signal processing, especially for cochlear prosthesis. This speech processing algorithm allows on the other hand the conception of one graphical spectrogram generating stimulating pulses. It is a useful simulation of electrical stimulating-pulses recommended for cochlear prostheses, especially for performing experiments and clinical set-up during stimulation test and re-education. This software provided in this stimulation technique ensures flexibility in programming, easiness in use as well as different safety features that could help reaching each individual's needs. (*Asian Journal of Scientific Research 1 (4): 293-309, 2008;* **doi:** *10.3923/ajsr.2008.293.309*)

Extraction of Hydrological Features from Digital Elevation Models Using Morphological Thinning

S. Dinesh

Abstract:he characterization of three important hydrological features, drainage networks, ridge networks and watersheds, is essential in the study of the geomorphological organization of a given terrain. In this study, mathematical thinning based algorithms to extract these three hydrological features from Digital Elevation Models (DEMs) are developed. First, the fundamental mathematical morphological operators, in particular morphological thinning based operators, are discussed. Drainage networks, ridge networks and watersheds are extracted using skeletonization by morphological thinning, exoskeletonization by morphological thinning and skeletonization by influence zone, respectively. The effectiveness of the proposed algorithms is tested by implementing them on a simulated DEM and the photogrammetrically generated DEM of Lake Mary. The proposed algorithms are able to operate effectively on flat areas in DEMs and produce complete and connected outputs. The accuracy of the extracted hydrological features is validated by gauging their conformity with Hack's law. A log-log plot of the length of the

longest stream in each extracted catchment against the corresponding catchment area is drawn. A power law relationship is observed between the two parameters. This power law relationship has a computed scaling exponent of 0.73, which is slightly higher than the standard value of 0.60 provided by Hack's law. This deviation indicates that raw extraction of hydrological features from DEMs is not sufficient to produce highly accurate hydrological features due to errors in DEMs and the results obtained need to be complemented with data from other GIS data captures, such as ground survey maps and Landsat Thematic Mapper images. *(Asian Journal of Scientific Research 1 (4): 310-323, 2008;* **doi:** *10.3923/ajsr.2008.310.323)*

Speed Control for IFOC Induction Machine with Robust Sliding Mode Controller

Noaman M. Noaman

In this study, an indirect Field-Oriented Control (IFOC) induction machine drive with a conventional PI and sliding mode controllers is presented. The robustness of ac machine drive speed performance with these controllers is checked in terms of variation of machine parameters. The design includes rotor speed estimation from measured stator terminal voltages and currents. The estimated speed is used as feedback in an indirect vector control system, such that the speed control is performed without the use of shaft mounted transducers. The high performance of the proposed control schemes under load disturbances is studied via simulation cases. The components of the speed controlled indirect field-oriented induction machine with the both controllers are simulated using SIMULINK, while the dynamic of induction machine is simulated using the potential of S-function block and its attached script file. *(Asian Journal of Scientific Research 1 (4): 324-337, 2008;* **doi:** *10.3923/ajsr.2008.324.337)*

Modeling the Thermal Performance of Solar Heated Fish Pond: An Experimental Validation

Lopa Ghosh, G.N. Tiwari, Tribeni Das and Bikash Sarkar

An analytical model is presented to study the effectiveness of a low cost arch shape greenhouse used for heating the fishpond during extreme winter. The model was solved for the climatic conditions of New Delhi (Latitude-$28°$ $35'$ N, Longitude-$77°$ $12'$ E and an altitude of 216 m above mean sea level). Parametric studies involved the effects of different greenhouse fishpond related parameters

including depth of pond water, transmissivity of greenhouse cover and number of air changes in the greenhouse on water heating in the fishpond. The thermal performance of fishpond was assessed in terms of thermal load leveling. A 4.76-5.83°C rise in water temperature could be achieved as compared to open pond of the day. The maximum heat gain and loss are around 14:00 to 17:00 and 1:00 to 7:00 h of the day, respectively. From production point of view greenhouse fish pond showed better performance compared to open pond. (*Asian Journal of Scientific Research 1 (4): 338-350, 2008; doi: 10.3923/ajsr.2008.338.350*)

Lipid Composition of the Copepod *Calanus finmarchicus* (Gunnerus) from the Irminger Sea in the North Atlantic Ocean Changes with Season and Life Cycle Stages

Abdullahi Ahmed Yusuf, Sarah Richards, Lynda Webster and Patricia Pollard

Accumulation of lipid reserves in the copepod *Calanus finmarchicus* (Gunnerus) is very important as it is the determinant of the time to enter into diapause for the completion of the life cycle. Storage lipids also provide energy for other metabolic activities such as gonad development and egg lying. The major lipid classes in *C. finmarchicus* Wax Ester (WE) and Triglyceride (TG) were identified using HP-TLC with the major class being WE followed by TG, while HPLC-ELSD was used to quantify the storage lipid reserves. Total storage lipids were significantly different between life cycle stages (ANOVA, $p<0.05$) with C4 stages having the highest lipid content (78.80%) of body weight. On the whole, storage lipids varied significantly between seasons in the order spring<winter<summer. Between shallow water (<100 m) and mid depth water (101-1000 m), lipid contents increased but decreased at deep water (>1000 m), thus storage lipids did not differ significantly with sampling depth (ANOVA, $p>0.05$). (*Asian Journal of Scientific Research 1 (4): 351-362, 2008; doi: 10.3923/ajsr.2008.351.362*)

Studies on the Epiphytic Algae Associated with Two Floating Aquatic Macrophytes in a Sluggish Non-Tidal Polluted Creek in Lagos, Nigeria

T.A. Adesalu, T.O. Abiola and T.O. Bofia

The algal flora associated with *Ipomoea aquatica* Forsk and *Lemna paucicostata* Heglem in a sluggish non tidal creek in Lagos, Nigeria were investigated bimonthly for six months (July to December 2004). Variation in the physico-chemical characteristics influenced the epiphytic algal communities and the

parameters were governed by the seasonality of rainfall and waste discharges. Four major classes were recorded in this study, Bacillariophyceae (Diatoms) Cyanophyceae, Chlorophyceae and Euglenophyceae. The algal flora was dominated by diatoms (34 pennate forms and 5 centric forms). The continued deposition of domestic and industrial wastes into the creek probably enhanced the colonization of an array of tolerant aquatic macrophytes and epiphytic algae in the creek. The presence of *Phacus*, *Leponcinclis* and *Trachelomonas* (Euglenoids) which were known to tolerate organically polluted waters, may be a strong indication of the high pollution status of the creek. *Ipomoea aquatica* had more epiphytic flora in terms of number than *Lemna paucicostata*. (*Asian Journal of Scientific Research 1 (4): 363-373, 2008;* **doi**: *10.3923/ajsr.2008.363.373*)

Application of Exponential Evolutionary Programming to Security Constrained Economic Dispatch with FACTS Devices

J. Jayakumar and K. Thanushkodi

This study presents an algorithm, for solving Security Constrained Economic Dispatch (SCED) problem with Flexible AC Transmission Systems (FACTS) through the application of Evolutionary Programming (EP). The problem is decomposed into the optimal setting of FACTS parameters subproblem and the OPF with fixed FACTS parameters subproblem. These two subproblems are solved by Exponential Evolutionary Programming (EEP). Two types of FACTS devices are used: Thyristor-Controlled Series Capacitor (TCSC) and Thyristor-Controlled Phase Shifting (TCPS). The proposed approaches have been implemented on an adapted IEEE 30 bus system. The simulation results indicates are compared and discussed to show the performance of the EP technique. (*Asian Journal of Scientific Research 1 (4): 374-384, 2008;* **doi**: *10.3923/ajsr.2008.374.384*)

Indirect Method for Quantification of Cell Biomass During Solid-State Fermentation of Palm Kernel Cake Based on Protein Content

Suraini Abd-Aziz, Gan Siew Hung, Mohd Ali Hassan, Mohamed Ismail Abdul Karim and Noraini Samat

Solid-State Fermentation (SSF) of *Aspergillus niger* FTCC 5003 on Palm Kernel Cake (PKC) is a practical approach to upgrade PKC into value added product. Present study was conducted on *Aspergillus niger* FTCC 5003 growth

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profile and models that are able to describe the growth in SSF using PKC substrate. Due to the difficulties of separating cell biomass quantitatively from the substrate for SSF systems, indirect method for measurement of cell growth during SSF of PKC by *Aspergillus niger* FTCC 5003 was studied based on the estimation of glucosamine and protein content. Preliminary relationships between glucosamine and protein contents to fungal dry cell weight (D_w) were developed using simulated homogenous SSF data using glass beads as support materials. Both glucosamine and protein contents were well correlated to the fungal dry cell weight in SSF on support materials for protein and glucosamine, respectively. The equations obtained were used for the estimation of cell biomass profile during SSF of PKC from the data of glucosamine and protein as growth indicator study. The estimated fungal dry cell weight based on protein concentration and β-mannanase activity as metabolic activity for microbial growth were well correlated to PKC dry weight which, indicating that both were suitable marker in describing the growth of *A. niger* FTCC 5003 in this system. In contrast, estimated fungal dry cell weight based on glucosamine concentration was not suitable to describe the growth of *A. niger* FTCC 5003. (*Asian Journal of Scientific Research 1 (4): 385-393, 2008; doi: 10.3923/ajsr.2008.385.393*)

Leaching Mathematical Modeling for Two Zones of North Khuzestan Province

M. Golabi, P. Papan and B. Karami

The main aims of present study are evaluation desalinization and desodification mathematical modeling in two zones of Northeast of Khuzestan province in Southwest of Iran with and without emendator material (Sulfuric acid). To reach the aims, the experiment was done in two zones with four treatments; 25, 50, 75 and 100 cm of water irrigation and four iterations in each plot (1*1 m) from surface to 150 cm of soil depth. Data that have used in this paper were Electrical Conductivity (EC) and Exchange Sodium Percentage (ESP). Data obtained from experimental results and with SPSS12.0 software eleven mathematic models have extracted. Results show that in zone one with and without acid Cubic equation for Electrical Conductivity and Exchange Sodium Percentage have the most and S, Logic equations have the least coefficient of determination. In addition, in zone two with and without acid for Electrical Conductivity Component, Growth and Power equations have the most and S, Logic equations have the least coefficient of determination. In zone two, the results of Exchange Sodium Percentage are similar to zone one. (*Asian Journal of Scientific Research 1 (4): 394-402, 2008; doi: 10.3923/ajsr.2008.394.402*)

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A Hybrid Genetic Algorithm for Optimal Power Flow Incorporating FACTS Devices

K. Vijayakumar and R.P. Kumudinidevi

This study presents an alternate algorithm to solve the Optimal Power Flow problem incorporating Flexible AC Transmission System Devices (FACTS) in a multi machine power system using Genetic Algorithm. Using the proposed method, the location, their type and rating of FACTS devices are optimized simultaneously. Among the various FACTS devices, Thyristor Controlled Series Compensator and Unified Power Flow Controller are considered. The proposed algorithm is used for finding the optimal choice and allocation of FACTS devices, such that the overall system cost which comprises of generation cost and investment cost of FACTS devices are minimized. (*Asian Journal of Scientific Research 1 (4): 403-411, 2008;* **doi:** *10.3923/ajsr.2008.403.411*)

Conversion of Fibrous Sago (*Metroxylon sagu*) Waste into Fermentable Sugar via Acid and Enzymatic Hydrolysis

A.C. Kumoro, G.C. Ngoh, M. Hasan, C.H. Ong and E.C. Teoh

The hydrolysis of dried-powdered fibrous sago waste by sulphuric acid and glucoamylase was studied. Both studies were carried out in an Erlenmeyer flask placed in a controlled temperature water bath. Samples were taken from the reaction flask at every 30 min interval for reducing sugar determination. The optimum condition for acid hydrolysis was found to be at 90°C, using 1.5 M acid concentration and reaction time of 120 min yielding 0.6234 g glucose g^{-1} waste. The kinetic parameters of acid hydrolysis in the Saeman's model, were the rate constant (k_1 = 0.01405 (1/min)), activation energy (Ea =120.40 (kJ mol^{-1})) and pre-exponential factor (A = 9.52×10^{16} (1/min)). The optimum condition for enzymatic hydrolysis using glucoamylase was found to be at enzyme concentration of 6 AGU mL^{-1} and reaction time of 30 min, yielding 0.5646 g glucose g^{-1} waste. The kinetic parameters in the competitive inhibition model corresponding to the optimum condition, namely the equilibrium constant for enzyme-inhibitor complex, Michaelis-Menten constant and maximum velocity, are 1.4727, 0.24175 and 1.35460 g L^{-1} min, respectively. (*Asian Journal of Scientific Research 1 (4): 412-420, 2008;* **doi:** *10.3923/ajsr.2008.412.420*)

Effects of Body Condition Score on Ovarian Activity of *Bos indicus* (ZEBU) Cows

V.A. Maina, A. Muktar and Y.G. Sabo

The ovaries of 127 *Bos indicus* cows were used to evaluate the influence of Body Condition Score (BCS) on ovarian activity. Each cow was given a body condition score using a scale of 1 to 5 before slaughter. The presence or absence of pregnancy was noted after slaughter and the ovaries were collected. Follicles were measured and identified as small (1 to 4 mm), medium (5 to 8 mm) or large (≥ 9 mm). *Corpus luteum* was classified as functional CL or *Corpus albicans* based on gross morphology. Luteal structures and follicles were compared with different phases of the oestrus cycle. Based on this, the cows were classified as cycling, pregnant, anestrus, prepubertal heifers or having abnormal ovarian cyclicity. Cows with BCS 3 exhibited more medium follicles ($p<0.001$) than cows with BCS 1 and BCS 2. Cows with BCS 3 had more large follicles ($p<0.01$) than cows with BCS 1. The incidences of cycling and pregnant animals correlated positively with BCS. Incidences of anestrus and abnormal ovarian cyclicity correlated negatively with BCS. It was concluded that change in BCS had significant effect on ovarian function of Zebus cows. (*Asian Journal of Scientific Research 1 (4): 421-428, 2008; **doi:** 10.3923/ajsr.2008.421.428*)

Experimental Investigations on the Duel Fueled Diesel Engine

K. Thirupathi Reddy, P. Ram Reddy and P.V. Ramana Murthy

In the present study, a four stroke, five horse power diesel engine was tested with two different fuel blends. In the first case, diesel-kerosene blends and in the second case, air and Liquefied Petroleum Gas (LPG) mixture along with diesel was tested at constant engine speed of 1500 rpm. Different engine exhaust emissions were compared using pure diesel, diesel-kerosene blends and air-LPG mixtures. With diesel-kerosene blends minimum exhaust emissions were observed at 30% kerosene blend, when compared with pure diesel emissions. Slight increase in the NOx exhaust emission was observed. With air-LPG mixtures, minimum exhaust emissions were observed at 11% LPG mixing. However, increase in NOx exhaust emission was observed. Engine performance improved and Specific Fuel Consumption (SFC) was observed to be minimal at 30% kerosene blending and decreased as compared to pure diesel value at the same brake power output. SFC was also observed to be minimum at 11% LPG mix and decreased by about 20% as compared to pure diesel value at the same brake

power output. The fuel operating cost also reduced at 30% kerosene blend and further reduced at 23% LPG mixing with air. (*Asian Journal of Scientific Research 1 (4): 429-436, 2008; doi: 10.3923/ajsr.2008.429.436*)

On the Non-Linear Deformation of Elastic Beams in an Analytic Solution

N. Tolou, J. Mahmoudi, M. Ghasemi, I. Khatami, A. Barari and D.D. Ganji

Non-linear dynamic of Elastic beams is investigated analytically. Homotopy Perturbation Method (HPM) is used to obtain the analytical solution of the fourth-order non-linear governing equation of beams. To demonstrate the validity of the proposed methods, the results which is obtained from the approximate solution has been shown graphically and compared with that obtained from the numerical solution. A clear conclusion can be drawn from the numerical results that the HPM provides highly accurate solutions for such nonlinear phenomenon. (*Asian Journal of Scientific Research 1 (4): 437-443, 2008; doi: 10.3923/ajsr.2008.437.443*)

A Semaphore Based Multiprocessing k-Mean Algorithm for Massive Biological Data

M. Hemalatha and K. Vivekanandan

In the present scenario, the concept of Distributed Processing System is more beneficial with respect to time saving, cost reduction and more clarity of clustering process. Earlier, while clustering huge amount of data it consumed lot of time, energy and cost. Now, by applying parallel and distributed approach, we can minimize the total time necessary for clustering the data thereby reducing cost. In this research, parallel and distributed version of k-means clustering algorithm is proposed. The proposed algorithm will be implemented using Matlab and will be tested with large synthetic data sets. (*Asian Journal of Scientific Research 1 (4): 444-450, 2008; doi: 10.3923/ajsr.2008.444.450*)

Development of an Automated Transplanter for the Gantry System

W.I. Wan Ishak, M.A. Awal and R. Elango

This study was carried out to create a new method of transplanting for various types of vegetables. An automated transplanter has been designed, developed and

tested to be integrated with the main Gantry System in a greenhouse. The method was used by using the latest concepts using the jiffy peat pot (biodegradable). A Cartesian Configuration was used for the seed transplanter movement system which operates in a 3-axis format. The Auto CAD 2002 software was used to develop a 3D concept design of the proposed transplanter. The transplanter used electricity as its power supply. This machine consisted of a quick attach 3 point hitch, an X-axis module, a Z-axis module, an auger, a pot tray, a gripper and a watering unit. The transplanter operated automatically using a Graphical User Interface developed by Visual Basic 6.0 software. A stepper motor and a DC motor were used to drive the axes module. It was configured to integrate with the control system software which was developed by using FP WIN GR software and then downloaded to the Nais FP2 PLC, as hardware of the system. (*Asian Journal of Scientific Research 1 (4): 451-457, 2008; **doi:** 10.3923/ajsr.2008.451.457*)

Levels of Some Trace Metals in the Fadama Soils and Pepper (*Capsicum annuum*) Along the Bank of River Challawa, Nigeria

U.A. Awode, A. Uzairu, M.L. Balarabe, O.J. Okunola and S.G. Adewusi

The levels and distribution of Pb, Cr and Cu in the soils and pepper (*Capsicum annuum*) on the bank of River Challawa were investigated. The metal levels, expressed in $mg\,kg^{-1}$ Dry Weights (DW) in the ranges: 60.00-143.30 for Pb (mean 114.79), 104.20-230.00 for Cr (mean 181.66) and 58.30-207.50 for Cu (mean 248.59) are obtained in soil samples; while 11.33-27.00 for Pb (mean 18.90), 10.40-35.10 for Cr (mean 20.04) and 7.56-21.07 for Cu (mean 14.52) are obtained in pepper samples. The relationship of metals was also examined for dependency upon some soil factor through the use of correlation analysis. Also, the results show the presence of correlation between metals in soil and pepper, which indicate possible transfer of these metals into the food chain. This has indirectly caused the accumulated of these heavy metals in the agricultural soils through irrigation and subsequently in the pepper planted in them, such that their concentrations in the soils and pepper (except Cu in pepper) exceed the recommended permissible limits. (*Asian Journal of Scientific Research 1 (4): 458-463, 2008; **doi:** 10.3923/ajsr.2008.458.463*)

Glitch Free and Cascadable Adiabatic Logic for Low Power Applications

N. Siva Sankara Reddy, M. Satyam and K. Lal Kishore

There have been several reports in literature on realization of adiabatic circuits. In our investigations we propose a family of adiabatic circuits which consist of two branches and which enable control of charging and discharging of the capacitive load only by the input signal alone, work with single time varying supply and with no need of complementary inputs unlike in most of the adiabatic circuits reported in literature. A mathematical expression has been developed to explain the energy dissipation in our adiabatic inverter circuit. Measurements of energy drawn, energy recovered and dissipated have been carried out through simulation and they agree well with those obtained from the theoretical expression. In the proposed circuit, the input and output logic levels are approximately the same and can be used for building cascaded logic circuits. The energy saving in this family is to the tune of 50% compared to CMOS circuits constructed with similar circuit parameters, up to 250 MHz. (*Asian Journal of Scientific Research 1 (4): 464-469, 2008; **doi:** 10.3923/ajsr.2008.464.469*)

Effective Factors in Determination Optimal Density of Forest Road Network

Majid Lotfalian, Yahya Kooch and Nosratollah Sarikhani

The aim of this research is to consider roads network quantity by reviewing the effective factors and finally determining the optimal road density. Sangdeh forests of Farim Wood Company were selected for this research that located at Savadkouh region of Mazandaran province (in Iran). In this research it is assumed that the effective factors in costs can be determined by using the mathematical model, as well as by the help of graphical model, less costs of skidding and road construction can be obtained; therefore, optimal road density can be evaluated. Harvesting methods, different types of roads, the ratio of each road to the whole network, stand per hectare, slope, geological conditions, presence of sand mine for constructing surface of roads, capital interest rate, wood exit costs, type of skidding or yarding machinery, slope and length correction coefficient, routes, type and number of load, allowable winching distance, brush and underbrush, condition of the roots, silvicultural methods (cutting form), regional soil, regional height, direction of the slope and morphology of the forest are factors which have been mentioned in this research as affecting determination of roads network density. For this, the model of evaluation and calculation of the time of skidder movement, which determines the skidding costs under the existing conditions in Sangdeh Forest, is as follows: $Y = -25.05 + 1.20\,X$. For the forest region of Sangdeh with 353 cubic meters stand per hectare and skidding in contract method, the roads network density is 23 m in hectare and for skidding by the company, the roads

network density is 19 meters in hectare; these numbers are the optimal ones. (*Asian Journal of Scientific Research 1 (4): 470-475, 2008; doi: 10.3923/ajsr.2008.470.475*)

Evaluation of Antistress Potential and Phytochemical Constituents of Aqueous Root Extract of *Alchornea cordifolia*

Ismaila O. Ishola, Razaq B. Ashorobi and Olusegun Adeoluwa

This study was conducted to evaluate phytochemical component and anti-stress potential of aqueous root extract of *Alchornea cordifolia* in mice. The phytochemical tests showed the presence of flavonoids, tannins, carbohydrates, glycosides, saponins and alkaloids. The antistress activity was evaluated using the forced swimming endurance and anoxic tolerance test. These activities were tested at oral doses of 100-400 mg kg^{-1} of the extract using *Panax ginseng* as experimental control. In the forced swimming test, *A. cordifolia* (100-400 mg kg^{-1}, p.o) significantly prolonged the swimming time in a dose dependent manner. The swimming time (sec) was increased from 313.8±18.24 in the control group to 434.2±20.50 and 531.0±16.58 in groups pre-treated with 200 and 400 mg kg^{-1} of the extract respectively. In the same vein, the extract dose dependently prolonged the mean time (min) to onset of clonic convulsion, the onset of clonic convulsion was increased from 23.6±0.51 in control group to 39.4±1.84 and 52.0±1.30 in groups pretreated with 200 and 400 mg kg^{-1} of the extract, respectively. This ability of *A. cordifolia* to prolong both the swimming time and onset of clonic convulsion, therefore suggest an antistress property. (*Asian Journal of Scientific Research 1 (4): 476-480, 2008; doi: 10.3923/ajsr.2008.476.480*)

Forecasting in Subsets Autoregressive Models and Autoprojective Models

J.F. Ojo, T.O. Olatayo and O.O. Alabi

Full autoregressive models are always characterize by many parameters and this is a problem. Some of these parameters are redundant that is close to zero and there is the need to eliminate these parameters through the concept of subsetting. Subsets autoregressive models are free from redundant parameters thereby lowering the residual variance and forecasting with such models will always give a better forecast. Likewise auto projective models calculate on the basis of current knowledge what the errors would have been which gives us some guide to errors of the future. It is in the light of the above we considered the subsets autoregressive

models and auto projective models, to see how these models will perform with regard to forecast. Exponential smoothening was used to forecast the future value in auto projective models while conditional least square predictor was used to forecast the future value in subset autoregressive models. An algorithm was proposed to eliminate redundant parameters from the full order autoregressive models and the parameters were estimated. To determine optimal models, residual variance, Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) were adopted. Results revealed that the residual variance attached to the subset autoregressive models is smaller than the residual variance attached to the auto projective models. We conclude that the forecast for subset autoregressive is preferred to the forecast for auto projective. (*Asian Journal of Scientific Research 1 (5): 481-491, 2008; **doi:** 10.3923/ajsr.2008.481.491*)

The Interactive Effect of Organizational Politics in the Justice, Organisational Support and Job Satisfaction Relationships

Okey E. Amah and Chinwuba A. Okafor

The study of the antecedents of job satisfaction (JS) is important because of the strategic role JS plays in organisational productivity. Three pervasive perceptions of work environment, organisational politics (OP), organisational support (POS) and justice (PJC) predict JS and affect individual's decisions in an exchange process. Joint effects of these variables have been theorized, but never tested. This study tested the interactive role of OP when POS, PJC and JS are contained in the same model. The study utilised 400 participants drawn from organisations in Nigeria. The results of the hierarchical multiple regression analyses, indicate that PJC and POS have direct effects on JS, while OP interacts with PJC to predict JS. The study highlights the importance of including OP, POS and the PJC in JS models. (*Asian Journal of Scientific Research 1 (5): 492-501, 2008; **doi:** 10.3923/ajsr.2008.492.501*)

Empirical Modeling of EDM Parameters Using Grey Relational Analysis

A. Doniavi, M. Eskandarzade, A. Abdi and A. Totonchi

Optimization of multi criteria problems is a great need of producers to product precision parts with low costs. Many methods such as Taguchi and Response Surface Methodology have been employed for optimization of EDM process. However there are few researches involve the optimization of multi-response problem in EDM process. The attempt of this paper is to optimize multiple

performance characteristics of EDM process using Grey relational analysis based on Taguchi orthogonal array. The response table and response graph for each level of the machining parameters is obtained and optimal levels of machining parameters including pulse on time, discharge current, discharge voltage and duty factor are found. The multiple performance characteristics including material removal rate, electrode wear ratio and surface roughness is considered. (*Asian Journal of Scientific Research 1 (5): 502-509, 2008;* ***doi:*** *10.3923/ajsr.2008.502.509*)

Efficiency of Anaerobic Digestion of Low-Strength Sludge under Different Thermophilic Conditions

Saleh Faraj Magram and Mahmoud Mohamed Abdel Azeem

This study reports the efficiency of the anaerobic process for digestion of low-strength domestic sewage sludge under different thermophilic conditions. The efficiency was assessed in terms of methanogenic activity along the experimental period as well as the maximum reduction of organics pollutants in the investigated sludge samples. The experimental work was conducted in a batch system under different temperatures (40, 45, 50°C) to ascertain the optimum condition for the degradation process. The results show a removal efficiency of 81% of COD, 96% of BOD and 74% of TS within about 52 days of inoculation under 40°C. Only a slight increase in removal performance was observed with the increase of operating temperature. The period required for complete digestion was also observed to be temperature independent. The M-Factor (COD removed into methane/COD removed) ranged around 0.25 irrespective of the operational temperature. Irrespective of the operating temperature, the maximum methanogenic activity was delayed until 52 days. In accordance with the observed results, it is suggested that the anaerobic digestion process should be designed according to the maximum methanogenic activity (gCOD-CH$_4$/gVSS/day) and the corresponding required digestion time (days), which, in turn, depend on the composition and characteristics of sludge. (*Asian Journal of Scientific Research 1 (5): 510-517, 2008;* ***doi:*** *10.3923/ajsr.2008.510.517*)

Valorization of *Myrtus communis* Essential Oil Obtained by Steam Driving Distillation

Houria Moghrani and Rachida Maachi

This study consists of the valorization of the essential oil of dry leaves of this plant (*Myrtus communis* L.) obtained by steam driving. This research was undertaken

in order to characterize the essential oil during spring season of the Myrtle, coming from a mountainous area, located roughly at 100 km in the east of Algiers. The analysis of this oil was carried out by gas chromatography and gas chromatography coupled with mass spectroscopy. This analysis revealed that the 1, 8-cineole and limonene represent the major compound of this oil. Also, the mode of exit versus time of the various compounds of the oil was studied. The fraction collected between 15 and 30 min revealed to contain 47. 33% in 1, 8-cineole and limonene. (*Asian Journal of Scientific Research 1 (5): 518-524, 2008;* ***doi:*** *10.3923/ajsr.2008.518.524*)

Monoclonal Antibody Production: Media Optimization for Enhancement the Cell Viability of Hybridoma Cell

Maizirwan Mel, Maizura Mat Saad, Yumi Zuhanis Hasyun Hashim and Mohamad Ramlan Mohamed Salleh

Media optimization of RC1 hybridoma cell culture for monoclonal antibody production was carried out in T-Flask experiment. The three identified important variables to affect the cell viability were studied. By using Central Composite Design of Response Surface Methodology (STATISTICA v 6.1) has shown that cell viability was mainly affected by glutamine, serum and $NaCO_3$ concentration, respectively. Among the 16 runs tested, Run 11 indicated the best viability of the cell (>80% for five days). The critical values were obtained at 13.5, 1.68 and 0.87% for serum, glutamine and $NaCO_3$, respectively. These data were very significant where the p-values obtained for glutamine, serum and $NaCO_3$ were 0.000069, 0.003968 and 0.342151 (R^2 = 0.95476 and R Adj. = 0.88691), respectively. (*Asian Journal of Scientific Research 1 (5): 525-531, 2008;* ***doi:*** *10.3923/ajsr.2008.525.531*)

Physicochemical and Microbiological Quality of Raw, Pasteurized and UHT Milks in Shops

Z.A. Shojaei and A. Yadollahi

This study was conducted to evaluate physicochemical and microbiological quality of raw, pasteurized and UHT milks in Shahrekord (Iran) in the spring 2005. All types of milk samples were collected from different part of the city were selected and in three consequent periods. The physicochemical parameters including fat, protein, temperature, Titrable Acidity (TA), Solid Not Fat (SNF) and Specific

Gravity (SG) were determined. Additionally, the microbiological evaluations were based on the total bacterial count, total coliform count and *Escherichia coli* (*E. coli*). The results (mean values of 81 measurements) for raw milk samples showed fat content 2.6, protein 3.5, T 18°C, TA 0.17, SNF 7.71 and SG 1.030 and total bacterial count 13×10^6 cfu mL^{-1}, total coliform count 1300 cfu mL^{-1} and *E. coli* positive. Those values for the pasteurized milks were the fat content 2, protein 3.5, T 15°C, TA 0.16, SNF 7.5 and SG 1.033 and total bacterial count 71×10^4 cfu mL^{-1}, total coliform count 800 cfu mL^{-1} and *E. coli* positive. Furthermore, the values of UHT milks were the fat content 2.8, protein 3.1, T 19°C, TA 0.15, SNF 8.3, SG 1.029, total bacterial count 71 cfu mL^{-1}, total coliform count 9 cfu mL^{-1} and *E. coli* negative. Statistical analysis of data revealed that there is significant difference between results of different shops at the level of $p<0.01$ which implies the contamination of raw and pasteurized milk is above standards. (*Asian Journal of Scientific Research 1 (5): 532-538, 2008; doi: 10.3923/ajsr.2008.532.538*)

Male Versus Female Intelligence among Undergraduate Students: Does Gender Matter?

H. Naderi, R. Abdullah and H. Tengku Aizan

The study investigated the difference between gender-role identity and intelligence of students at Universities. The samples were 153 participants consisting of 48 females and 105 males' undergraduate Iranian students in Malaysia Universities. All students were given a Catell Culture Fair Intelligence Test (CCFIT). The instrument consisted two subscales, namely, intelligence (Form A) and intelligence (Form B). Each subscale had fifty items. The mean age and SD for female's students (FS) were 22.27 and 2.62, for ages of 18 to 27 and for male's students (MS) mean age and SD were 23.28 and 2.43, for ages of 19 to 27. The sampling method in this study was the simple randomization method. Descriptive statistics focusing on average and t-tests were used to examine differences between male and female students in this study. The CCFIT as a questioner test included 100 items about quantitative the 2 parts of Intelligence (Form A) (50 items) and intelligence (Form B) (50 items). In general, the results were not found significant between female and male students in relation to intelligence. Further research is needed to investigate whether identify factors at the university environment influence the development of female and male's intelligence. (*Asian Journal of Scientific Research 1 (5): 539-543, 2008; doi: 10.3923/ajsr.2008.539.543*)

Ecological Features of Oyster Beds Distribution in Qatari Waters, Arabian Gulf

J.A. Al-Khayat and M.A. Al-Ansi

The aims of the present investigation were to study the feature of biotic environment of oyster beds and to study quantitatively the biodiversity of fauna and flora living within these habitats. Eighteen selected oyster beds, within the Exclusive Economic Zone of Qatar were investigated by scuba diving. Most of the oyster beds were found in the area with sandy-rocky and Coral blocks bottom forms. Pearl oysters abundance varied widely between the different beds and within the same beds due to the variations in the bottom substrates. The associated biota was composed mainly of Algae (4%), Porifera (3%), Cnidaria (8%), Polychaeta (4%), Echinodermata (13%), Mollusca (55%), Chordate (2%) and Crustacean (11%). The comparison of our findings on the occurrence and distribution of marine biota to previous studies has shown similarities between Qatar and other Gulf States particularly Saudi Arabia and Bahrain. (*Asian Journal of Scientific Research 1 (6): 544-561, 2008; **doi:** 10.3923/ajsr.2008.544.561*)

Heat Transfer Enhancement in the Presence of an Electric Field at Low and Intermediate Reynolds Numbers

E. Esmaeilzadeh, A. Alamgholilou, H. Mirzaie and M. Ashna

The aim of this study is an application of the EHD actuator on local heat transfer enhancement by using wire-plate electrodes in laminar and turbulent duct flow. In this study, the effects of an electric field and temperature field on the fluid flow as an active method of enhancement is numerically investigated. The hydrodynamics and heat transfer behaviors of laminar and turbulent duct flow with specific boundary conditions in the presence of an EHD actuator was taken into consideration. The partial difference equations of flow field and electric field namely continuity, momentum and energy equations for fluid flow and electric current and Poisson's equations for electric field was numerically solved with finite volume method. At first, the electric equations were solved and then the results were imported to the fluid field for improvement of the body forces. The obtained results show for the flows with $Re \leq 1000$ with single wire-plate electrode is suitable for local enhancement. By adding the number of wires to three, it is possible to use this method for turbulent flow up to $Re = 2000$. (*Asian Journal of Scientific Research 1 (6): 562-578, 2008; **doi:** 10.3923/ajsr.2008.562.578*)

Modeling Temperature and Resilient Modulus of Asphalt Pavements for Tropic Zones of Iran

S.A. Tabatabaie, H. Ziari and M. Khalili

In the present study, a temperature model and a resilient modulus model of asphalt pavements are developed for tropical zones of Iran. Through the investigation of asphalt mixtures reactions to temperature increase, a mathematical model is developed. This model makes the prediction of asphalt course temperature in various depths (with different parameters) possible. Twenty-four samples were made with different mix designs and located in settings that a real pavement experiences in its service life in tropical zones. Four variables that were considered for making samples are bitumen percent, bitumen type, level of compaction and gradation of aggregates. By means of gathering the samples' temperatures in three different depths and corresponding air temperatures for nine months a data base was made by which the model was developed. Using indirect tensile tests in three different temperatures, the resilient modulus of samples similar to the samples of study were measured to develop the model. The results show that there is a significant correlation between three out of four variables of the study and predicted temperatures. The variables are bitumen percent, bitumen type and level of compaction. Moreover, it was found that, besides temperature, bitumen type is the only variable that appears in the resilient modulus model. (*Asian Journal of Scientific Research 1 (6): 579-588, 2008; **doi:** 10.3923/ajsr.2008.579.588*)

Specific Method for Spectrophotometric Determination of Gossypol

J.B. Tchatchueng and Catherine Porte

Simultaneous reactions of aniline on the aldehyde groups and ammonium molybdate on the ortho-diphenolic groups of gossypol were studied in tartaric acid buffer solution. The results indicated in the range 300-520 nm that the spectrum of dianilino-dimolybdate of gossypol complex obtained presents two peaks of absorption at 340 and 450 nm whereas the dianilino-gossypol and the dimolybdate of gossypol present one peak at 444 and 420 nm, respectively. The pH effect on the intensity of the absorption indicated that the optimum pH was 6.5. Gossypol is the only compound in the cottonseed extract having two peaks of absorption in the range 300-520 nm. The calibration curve was linear over the range 0.634-4.953 ppm ($r^2 = 0.9949$) with the detection limit of 0.474 ppm. The stability of the complex was 90 min. The method was sensitive, specific and accurate for the

determination of total gossypol in glanded cottonseed, crude, neutral and refined glanded cottonseed oil. (*Asian Journal of Scientific Research 1 (6): 589-597, 2008; doi: 10.3923/ajsr.2008.589.597*)

Discrete Kirchhoff Elements for the Reinforced Concrete Beams Modeling Comparison Between the Elasto-Plastic and Damage Behavior Models

D. Zaoui, Z. Dahou, A.M. Hamouine, D. Douli and M. Djermane

The study treats the plane modeling of the reinforced concrete beams, by using the discrete Kirchhoff triangular finite elements available in Castem 2000. The simulation takes into account the nonlinear behavior of the concrete material such as elasto-plastic of Druker-Prager and Mazars damage models. The obtained results of the beam in 3 points flexural case are in good agreement with the references values. The comparisons illustrate the specifications, the advantage and also the richness of each validated model. (*Asian Journal of Scientific Research 1 (6): 598-605, 2008; doi: 10.3923/ajsr.2008.598.605*)

Advances in Modeling and Simulation of Biomass Pyrolysis

N. Prakash and T. Karunanithi

The various aspects of modeling and simulation work carried out so far in biomass pyrolysis since 1946 have been extensively reviewed in the present study. Biomass pyrolysis, one of the few non conventional energy routes, is highly promising and capable of handling the current energy crisis successfully for the present and in the near future. Pyrolysis as a stand alone or as the core of biomass gasification process is complex in nature, the understanding and knowledge of this multifaceted phenomenon can heavily influence the efficiency and effectiveness of the whole gasification process. Even though, the modeling of biomass pyrolysis process was initiated during 1940's gradual changes, improvements and alternates have been carried out throughout these years. All these years, various modeling approaches were adopted, different kinetic schemes were proposed, diverse numerical schemes were followed and range of parameters were implemented, all these have developed a baffling picture over the subject. The complexity of the process, as such the large number of components involved in the intermediates and end products; the dependency of the process over numerous parameters namely the temperature, space and time dependent physical, thermodynamic and transport properties, the particle shape, size, shrinkage factors and moisture content all these

justify even today the necessity and requirement of research for further improvement and enrichment in the modeling and simulation fronts of this process. This study sums up the work carried out in literature on modeling and simulation of wood pyrolysis and suggests new research directions and approaches necessarily to be made up in future. (*Asian Journal of Scientific Research 2 (1): 1-27, 2009; **doi:** 10.3923/ajsr.2009.1.27*)

A Protection Scheme for Three-Phase Induction Motor from Incipient Faults Using Embedded Controller

M. Sudha and P. Anbalagan

This study presents a protection scheme for three-phase induction motor from incipient faults using embedded microcontroller. The induction motor experiences several types of electrical faults like over/under voltage, over load, phase reversing, unbalanced voltage, single phasing and earth fault. Due to these electrical faults, the windings of the motor get over heated which lead to insulation failure and thus reduce the life time of the motor. To analyze the behavior of induction motor during electrical faults, the induction motor is modeled using arbitrary reference frame theory in MATLAB/Simulink environment; the faults are created and the variation of the induction motor parameters under faulty conditions are observed. Based on the analysis, embedded controller is developed to protect the motor from incipient faults. (*Asian Journal of Scientific Research 2 (1): 28-50, 2009; **doi:** 10.3923/ajsr.2009.28.50*)

Estrogen Receptor-α Gene, Codon 594 (G3242A) Polymorphism Among Iranian Women with Breast Cancer: A Case Control Study

Sakineh Abbasi, Patimah Ismail, Fauziah Othman, Rozita Rosli and Cyrus Azimi
A case-control study was conducted to establish a database of ESR1 polymorphisms in Iranian population in order to compare Western and Iranian (Middle East) distributions and to evaluate ESR1 polymorphism as an indicator of clinical outcome. The *ESR1* gene was scanned in Iranian patients newly diagnosed invasive breast tumors, (150 patients) and in healthy individuals (147 healthy control individuals). PCR single-strand conformation polymorphism technology and direct sequencing was performed. The silent single nucleotide polymorphism (SNPs) was found, as reported previously in other studies, but at significantly different frequencies. The frequency of genotype 01 in codon 594 (ACG→ACA), (G3242A), exon 8 was significantly higher in breast cancer patients

(48.0%) than in control individuals (1.4%; p = 0.001). The allele 1 in codon 594 was significantly more common in breast cancer patients with age at menarche </=12 (40.8%) than in those which their menstruation began at older than 12 years old (23.9%; p = 0.002). The allele 1 in codon 594 exhibited, the greater the frequency, the lesser the likelihood of LN metastasis. Present results demonstrated that this particular SNP marker may increase accuracy in predicting LN. Therefore, this SNP marker further increased predictive accuracy in Iranian population. These data suggest that ESR1 polymorphisms are correlated with various aspects of breast cancer in Iranian *ESR1* genotype, as determined during pre-surgical evaluation, might represent a surrogate marker to increase predicting breast cancer in Iranian population. (*Asian Journal of Scientific Research 2 (1): 51-60, 2009;* **doi:** *10.3923/ajsr.2009.51.60*)

Comparison of Bone Mineral Density in Isfahani Women with other Populations: The Impact on Diagnosis of Using Different Normal Ranges

M.R. Salamat, M.B. Tavakoli, M. Salehi, E. Pishva, A.H. Salari and F. Tabesh

Bone Mineral Density (BMD) of 359 healthy Isfahani women aged 23-60 years were compared with the Caucasian's, Tehranis and some Arab women. BMD was determined using dual energy X-ray absorptiometry (DXA) at the lumbar spine and proximal femur. Age related changes in BMD were similar to those described in Lebanese and Saudis for the femur, Lebanese having the lowest femur BMD. However, the age related values for the spine were similar for all populations, having the lowest BMD values for the Isfahani women. The problem of using manufacture provided reference data was investigated. In fact using the manufacture provided reference data for the femoral neck diagnosed only 14.9% of the postmenopausal women as normal due to improper use of T-score, while using the Isfahan normative data 41.9% of the postmenopausal women were diagnosed as normal. The normative peak BMD values acquired for Iranian women in Isfahan and Tehran were different, in particular for the spine. The normative BMD values in Isfahan were only acquired for the young women. Therefore, for the management of patients, determining the secondary causes of osteoporosis (Z-scores<-2) it is highly recommended to establish the normal range for the entire age range of 20-80 years normal women and make further investigations to find the reason(s) for the discrepancies in the normal BMD ranges of women in Iran. (*Asian Journal of Scientific Research 2 (1): 61-67, 2009;* **doi:** *10.3923/ajsr.2009.61.67*)

Estimation of Global Solar Radiation in Rwanda Using Empirical Models

B. Safari and J. Gasore

Understanding solar radiation data is essential for modeling solar energy systems. The purpose of the present study was to estimate global solar radiation on horizontal surface using sunshine-based models. Angström-type polynomials of first and second order have been developed from long term records of monthly mean daily sunshine hour values and measured daily global solar radiation on horizontal surface at Kigali, Rwanda. Coefficients of those polynomials were derived using least square regression analysis. These coefficients were then used for the estimation of solar radiation in other places of Rwanda where measures of solar radiation do not exist but sunshine records are available. (*Asian Journal of Scientific Research 2 (2): 68-75, 2009; **doi:** 10.3923/ajsr.2009.68.75*)

The Study of Properties of WC-Based and W-Based Composites Fabricated by Infiltration with Liquid Cu-Mn Binder

M. Tata, D. Miroud, S. Lebaili and T. Cutard

This study refers to the characterization of alloys WC-W-Ni, obtained from a process of sintering, by using fine powders infiltrated by an alloy Cu-Mn binder. This process is used to produce a carbide cemented high-speed cutting tools and drilling tools because of their high hardness, refractoriness and wear resistance. The study required, the determination of the sintering conditions of the infiltration. The operation of infiltration consists of heating the binder until the melting point 950°C to let it infiltrate by gravity, the mixture of metal powders respectively, W, WC, W+Ni, WC+Ni and WC+W, thus allowing the powder grains to drown in the binder while being densified during cooling. The characterization of powders is used to determine theirs physical properties, chemical composition, powder classes and specific surface. The present study investigates the possibilities of Cu-Mn alloys used as binder alloys in infiltration of WC-based and W-based powders. After infiltration, a microstructural and mechanical characterization of the sintered samples and infiltrant were conducted in order to include/understand the phenomena implied during the densification and infiltration. (*Asian Journal of Scientific Research 2 (2): 76-86, 2009; **doi:** 10.3923/ajsr.2009.76.86*)

Methoxy Poly Ethylene Glycol-*b*-poly (D, L-lactide-*co*-glycolide) Films as Drug Delivery Systems for Ibuprofen

Y. Baimark and T. Phromsopha

Methoxy poly (ethylene glycol)-*b*-poly (D,L-lactide-*co*-glycolide) diblock copolymers (MPEG-*b*-PDLLG) films containing a poorly water-soluble drug were prepared by evaporation method of MPEG-*b*-PDLLG and drug solution in dichloromethane. Ibuprofen was used as a poorly water-insoluble model drug. Influences of MPEG block length and DLL/G ratio on drug-loaded film character and drug release behavior were investigated. Inhibition of entrapped ibuprofen crystallization in the MPEG-*b*-PDLLG films was observed from thermal analysis. The drug release rates increased as the MPEG block length increased. Incorporation of G units in the PDLL block also induced the faster drug release rate. The drug had released from the films through diffusion mechanism. (*Asian Journal of Scientific Research 2 (2): 87-95, 2009; **doi**: 10.3923/ajsr.2009.87.95*)

Adsorptive Removal of Arsenite as (III) and Arsenate as (V) Heavy Metals from Waste Water using *Nigella sativa* L.

S.M. El-Said, M.B.S. Alamri, Ali-Bin Saleh El-Barak and O. Alsogair

This study was focused on *Nigella sativa* Linn. as an alternative absorbent in order to remove As (III) and arsenate As (V) from synthetic waste water. As such, *Nigella sativa* L. was collected from Burydah A-Qassim. Batch experiments were conducted to determine the adsorptive efficiency of *Nigella sativa* L. to remove As (III) and arsenate As (V) from waste water. The preliminary experiments were revealed that alkaline solutions (pH>9) without *Nigella sativa* L. caused homogeneous oxidation of As (III) to As (V) so the adsorption process was investigated at pH range 2-8. The batch experiments were revealed that adsorption of As ion on *Nigella sativa* L. was maximal at low pH (at a 3.0) value. The adsorption studies revealed that the ongoing adsorption validates Langmuir adsorption isotherms at temperatures 25, 35 and 45°C. The adsorption isotherm data was also employed to calculate the thermodynamic parameter of Gibb's free energy which gives a negative value for the adsorption of As ion on *Nigella sativa* L. The negative values of free energy indicate the feasibility and spontaneous nature of the adsorption process. From these results, it can be concluded that the *Nigella sativa* L. could be a good adsorbent for the removal of cationic metals coming from waste water. (*Asian Journal of Scientific Research 2 (2): 96-104, 2009; **doi**: 10.3923/ajsr.2009.96.104*)

Scalp Nerve Block in Children Undergoing a Supratentorial Craniotomy; A Randomized Controlled Study

Manal el Gohary, M. Gamil, K. Girgis and Sherry Nabil

The aim of this randomized double blinded controlled study was to evaluate the effect of SNB during craniotomies for supratentorial tumors in pediatric patients, with respect to intra- and postoperative hemodynamics, intraoperative anesthetic and analgesic consumption and postoperative analgesic requirements. Thirty children, aged 6 to 12 years, scheduled for elective craniotomies for supratentorial tumors were randomly assigned to one of two groups: control group (n = 15) and Scalp Nerve Block (SNB) group (n = 15). After a standardized induction and 5 min prior to head pinning, a SNB was performed. In the control group the block was performed with normal saline, while in the SNB group the block was performed with bupivacaine 0.25%. Intraoperative Mean Arterial blood Pressure (MAP) and Heart Rate (HR) were recorded before induction (baseline), 5 min after induction, at head pinning and at skin incision, together with sevoflurane and fentanyl consumption. Postoperative MAP and HR were measured and recorded. Postoperative pain assessment was done using Visual Analogue Scale (VAS) score. Rescue analgesia (IV paracetamol, 15 mg kg^{-1}) was given for a VAS>3. Time to first rescue analgesic, number of patients who required analgesia as well as number of paracetamol doses in the first 24 h postoperative were recorded. The SNB group showed more stable intraoperative and postoperative hemodynamics and a significant reduction in the total intraoperative fentanyl dose required. VAS scores were significantly lower in the SNB group compared to the control group till 12 h postoperative. Significantly fewer patients in the SNB group required rescue analgesic in the first 24 h postoperative (8 vs. 15, p<0.05). Time to first rescue analgesic was significantly longer in the SNB group compared to the control group (6.6±1.9 h vs. 1.7±0.8 h, p<0.05). Number of paracetamol doses required in the first 24 h postoperative was significantly higher in the control group compared to the SNB group. We conclude that SNB using bupivacaine 0.25% results in decreased intraoperative analgesic requirements and more stable intra- and postoperative hemodynamics. It also reduces postoperative pain leading to decreased postoperative analgesic consumption. (*Asian Journal of Scientific Research 2 (2): 105-112, 2009; doi: 10.3923/ajsr.2009.105.112*)

Blood Chemistry Changes as an Evidence of the Toxic Effects of Anionic Surfactant Sodium Dodecyl Sulfate

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The objective of the present study was to investigate the toxic, damaging and irritative effects of repeated exposure to Sodium Dodecyl Sulfate (SDS) on rabbit skin. The animals were exposed to 5% solution of SDS for 8 weeks through skin brushing. All exposed rabbits manifested dermatitis and they were dull, depressed, emaciated and their body weight was decreased. Blood chemical parameters including alkaline phosphatase (ALP), alanine transaminase (ALT), aspartate transaminase (AST), gama-glutamyl transferase (GGT), amylase, cholesterol, high density lipoproteins (HDLPs); triglycerides (TGs), creatinine, urea, glucose and potassium (K^+) were estimated after 8 weeks of SDS exposure. All blood parameters except ALP and creatinine were significantly increased or decreased as compared to that of the controls. It is concluded that topical application of SDS is capable of damaging the skin with all signs of dermatitis. Further, SDS is capable of being adsorbed and penetrates through the skin barrier and thus reaches the internal organs such as liver to provoke systemic damages. The estimated blood parameters can potentially serve as biomarkers for assessing SDS toxicity. However, further studies are warranted to confirm this hypothesis. (*Asian Journal of Scientific Research 2 (2): 113-118, 2009; **doi:** 10.3923/ajsr.2009.113.118*)

Synthesizing the 2004 Mw 6.2 Kojour Earthquake Using Empirical Green's Function

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The main objective of this study is to simulate the acceleration time histories of May 28, 2004 Kojour earthquake (M_w 6.2) happened at Northern part of Iran. The uncertainties inherently exist in the seismological parameters are reduced to find the suitable parameters for synthesizing process. The hypocenter location, focal mechanism and the causative fault dimensions are some of the parameters, studied in this article. The Empirical Green's Function method approach along with a genetic algorithm technique is used to optimize the differences between synthesized ground motions and observed data and consequently to extract the aforementioned seismological source parameters. The proposed technique is

utilized by comparing the elastic response spectra corresponding to the synthesized three components of the main event at Poul station and those of the recorded data. Thereafter, to find out the accuracy of the method, using the estimated source parameters from the approach, the Empirical Green's Function method is utilized to generate the three components of strong motion recorded at another station, Noshahr. Proper match of the synthesized and observed data confirms the suitability of selected model parameters and the efficiency of the method for synthesizing ground motions. Also, the three components of acceleration time histories of the mainshock were predicted at another station, Baladeh, at which the main event was not recorded during the earthquake. The proposed approach can be used to find the acceleration response spectra and also time histories that are compatible with those response spectra for studying structural behavior during happened earthquakes in the regions with lack of recorded time histories. (*Asian Journal of Scientific Research 2 (3): 119-134, 2009;* **doi:** *10.3923/ajsr.2009.119.134*)

Application of DDQ and p-Chloranilic Acid for the Spectrophotometric Estimation of Milrinone in Pharmaceutical Formulations

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Two simple, rapid and sensitive spectrophotometric methods have been proposed for the determination of milrinone in pharmaceutical formulations. The first method is based on the charge transfer complexation reaction of milrinone with 2, 3-Dichloro-5, 6-Dicyanobenzoquinone, DDQ while the second method is based on charge transfer reaction of milrinone with p-Chloranilic Acid (pCA). Under the optimized experimental conditions Beer's law is obeyed in the concentration range of 2-40 μg mL^{-1} for method A and 5-100, 2-40 μg mL^{-1} for method B. The recovery ranged from 100.06 -100.11 for method A and from 99.34 -99.97 for method B. The coefficient of correlation was found to be 0.9998 for A and 0.9999 for B and the detection limit for method A and method B was found to be 0.765 and 3.35, respectively. Both the methods have been applied to determination of milrinone in the pharmaceutical formulation. Results of the analysis are validated statistically. (*Asian Journal of Scientific Research 2 (3): 135-145, 2009;* **doi:** *10.3923/ajsr.2009.135.145*)

Protein Extraction and Preparation of Protein Hydrolysates from Rice with Low Phenylalanine Content

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Aiming the introduction of rice in the phenylketonurics diet, the protein extraction and phenylalanine (Phe) removal processes were studied. For protein extraction, an enzymatic method was used and for Phe removal, a papain and an Activated Carbon (AC) were used. The influence of protein:AC ratio, type and way of using AC was tested. The efficiency of Phe removal was evaluated by second derivative spectrophotometry. The results showed that the condition which gave the highest protein extraction yield (63.4%) was that using a sample concentration of 1:10 (w/v) at a temperature of 50°C, as well as an enzyme:substrate ratio of 10:100 at a reaction time of 5 h. Activated carbon was efficient for removing Phe, leading to values above 70% for most of the samples and the best result (94.1% of Phe removal) was found for a protein:AC ratio of 1:88, using simultaneously three types of AC (20×50, 12×25, 6×12 mesh), which led to a final Phe content of 82.5 mg kg^{-1} of hydrolysate.

Comparison of NmF2 Variability at Ibadan, Singapore and Slough during Different Epochs of Solar Cycle

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NmF2 variability, VR, at Ibadan (7.4°N, 3.9°E, 6°S dip) is investigated for diurnal and seasonal changes during low, moderate and high solar activity. It is also compared with those of Singapore (1.3°N, 103.8°E, 17.6°S dip) and Slough (51.5°N, 359.4°E, 66.5°S dip). NmF2 absolute VR (and not only relative VR) is greater during the night and slightly greater around noon than during other daytime hours. While, daytime NmF2 shows no seasonal variation, night time NmF2 is greater during the equinoxes at low and moderate solar activity and during the equinox and June solstice at high solar activity. Daytime VR found not to show latitudinal difference during moderate solar activity is observed to increase with latitude during high solar activity. Nighttime VR is found to decrease with latitude during high solar activity. While, NmF2 VR at Ibadan and Singapore are found to decrease alternately with sunspot number, R, that of Slough is observed to increase with R during about the first half of the day and to decrease with R during the other part.

Anatomical Structures and Fiber Morphology of New Kenaf Varieties

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Kenaf plant is claimed as one of the fast-growing herbaceous plants with the high potential as a fiber material or lignocellulosic material. Nine kenaf varieties i.e., Q-Ping, KK60, V12, V19, V36, V132 and NS V133 and TK were introduced recently by Taman Pertanian Universiti, Universiti Putra Malaysia as one of the potential plant to replace tobacco plantation. Since, these nine kenaf varieties are new to Malaysia, therefore, there is a need to study their anatomical structures and fiber morphology as well as microscopic appearances to understand their different and similarity. Cell morphology and anatomical appearances were observed and evaluated under the image analysis system (Leitz DMRB). From the results, V19 and V12 had the wider ray among the nine varieties, whereas other varieties in their microscopic appearance were almost similar to those observed in many diffuse-porous hardwoods. The longest fiber length was observed in variety TK (2.96 mm) followed by V36. Q-ping showed the widest fiber diameter and lumen diameter amongst the nine varieties, with value of 28.64 µm in bast fiber and 28.06 µm in core diameter. However, Q-ping had the thinnest core cell wall with the thickness of 3.34 µm. In term of fiber length, all the kenaf varieties bast fiber has longer fiber than core fiber. The kenaf core of nine varieties has wider fiber diameter and fiber lumen diameter than the bast fiber. Conclusively, although kenaf exhibit similarity in some fiber morphology and anatomical structures, however, there still some distinction that can be used to differentiate these kenaf variety. (*Asian Journal of Scientific Research 2 (3): 161-166, 2009;* **doi:** *10.3923/ajsr.2009.161.166*)

Collagenase and Sodium Iodoacetate-Induced Experimental Osteoarthritis Model in Sprague Dawley Rats

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The objective of this study was to apply and compare two different experimental osteoarthritis (OA) methods in the rat, namely: Collagenase induced OA (CO) and Monosodium iodoacetate induced OA (MIA) models. The assessment of OA development and progression were performed through three different periods (2, 4 and 6 weeks). Intra-articular injection of either 4 mg joint^{-1} CO type II or 3 mg joint^{-1} MIA, were administered to the adult male Sprague Dawley rats, into their right knee joints. Evaluation of OA changes in the knees was achieved with both histopathology score system and radiography approach. Gross results revealed

earliest changes such as swelling and redness of the right knee joints of all rats injected with either CO or MIA. Joint dissection revealed distinct thickening of the joint capsule in MIA-injected rats than in CO group. Present finding revealed early development of radiographical as well as histopathological changes in MIA injected group. However, both OA injected groups resulted in a chronic joint degeneration, measured by cellular changes, matrix degradation, subchondral changes and marginal osteophyte formation. Present findings showed significantly higher histopathological score in MIA injected group than those of CO in each of the three selected periods for OA induction. In conclusion, present results demonstrated that MIA can induce OA changes in a shorter period of time than CO in the Sprague Dawley rat. Radiography approach could be a useful tool to evaluate osteoarthritic changes in the knee joints. (*Asian Journal of Scientific Research 2 (4): 167-179, 2009; doi: 10.3923/ajsr.2009.167.179*)

Anti-Diabetic Activity of Aqueous Extract of *Monascus purpureus* Fermented Rice in High Cholesterol Diet Fed-Streptozotocin-Induced Diabetic Rats

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The present study was designed to investigate the hypoglycemic and hypolipidemic activity of aqueous extract of *Monascus* fermented Indian variety rice in high cholesterol fed-streptozotocin-induced diabetic rats. Wister rats were fed with high cholesterol diet for 2 weeks prior to intra-peritoneal injection with streptozotocin (50 mg kg^{-1}). The Indian variety rice IR-532-E-576 was fermented with *Monascus purpureus* for 10 days and sterilized. Aqueous extract of the fermented rice at two dose levels showed a significant decrease in fasting blood glucose level. The total cholesterol and triglycerides were also significantly reduced where as the HDL cholesterol levels were significantly increased, which confirmed the potent anti-diabetic property of the *Monascus purpureus* fermented rice in diabetic rats, which may be due to presence of statins. (*Asian Journal of Scientific Research 2 (4): 180-189, 2009; doi: 10.3923/ajsr.2009.180.189*)

Investigation on the Effect of Different Disintegrants on the Orodispersible Tablets of Rabeprazole

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In the present study, an attempt was made to formulate orodispersible tablets of rabeprazole. Tablets were prepared by direct compression method using diluent

and various disintegrants. Tablets were also prepared using treated agar (TAG) powder as one of the disintegrant. A total number of ten formulations were prepared and evaluated. Along with physicochemical parameters, the tablets were also evaluated for special parameters like wetting time, *in vitro* dispersion time, *in vitro* disintegration and *in vitro* drug release. The results of wetting time, *in vitro* dispersion time and *in vitro* disintegration signify that as the concentration of disintegrant increases the time required for disintegration decreases. A better disintegration was observed in formulation OT1, OT2, OT5 and OT6 containing crospovidone and croscarmellose sodium. The correlation and slope values obtained after performing *in vitro* release studies indicated that all the ten formulations followed first order release rate kinetics. (*Asian Journal of Scientific Research 2 (4): 190-197, 2009;* **doi:** *10.3923/ajsr.2009.190.197*)