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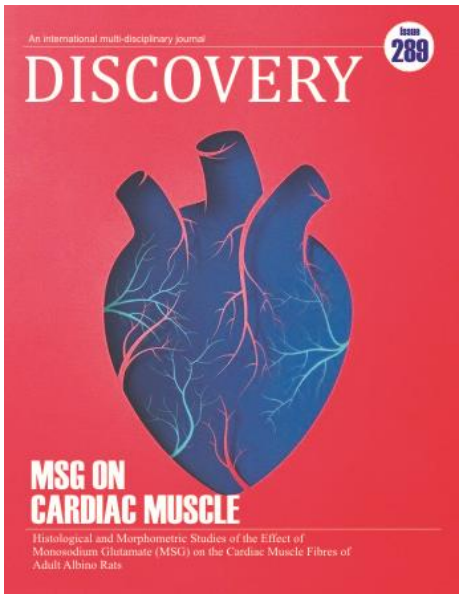
DISCOVERY

About the Cover



This research was to determine the histological effect of monosodium glutamate (MSG) on the cardiac muscle fibres of adult albino rats. Thirty (30) albino rats were divided into five (5) groups (A-E) of six rats each at random and administered orally with aqueous solution of MSG daily. Group A served as the control group and received normal saline. Group B served as the low dose group and received 4mg/kg body weight of MSG for 28 days. Group C served as the high dose group and received 8mg/kg body weight of MSG for 14days, while group D served as the high dose group and received 8mg/kg body weight of MSG for 28 days and group E served as the high dose group and received 8mg/kg body weight of MSG for 28 days and allowed for another 28 days post treatment to observe for reversibility, persistence or delayed occurrence of any toxicity. The aqueous solution of MSG was at the concentration of 80g/litre daily for the periods of fourteen (14) days and twenty-eight (28) days respectively. At the end of the experimental period, the animals were anaesthetized using chloroform, sacrificed and the heart was carefully removed and weighed before fixing in 10% formalin. The heart tissue was then processed for paraffin sectioning. Administration of MSG to rats showed a significant ($p < 0.05$) increase in the thickness of myocytes, width of extracellular spaces and muscle fibers discontinuity with severity increasing with doses and time of exposure. Withdrawal of MSG for 28 days showed some degree of recovery by a reduction in thickness of myocytes and extracellular spaces as well as muscle fibers discontinuity. There was increase in size and number of fibroblasts when compared with the control. These findings suggest that the histological organization of the cardiac muscle fibers can significantly be altered with continuous and/or increased used of MSG. (Ref: Kingsley A. Okon, Akpan U. Ekanem, Gabriel D. Edem, Martha Orendu Attah. Histological and Morphometric Studies of the Effect of Monosodium Glutamate (MSG) on the Cardiac Muscle Fibres of Adult Albino Rats. *Discovery*, 2020, 56(289), 36-43); (Image: EikoOjala).

ENGINEERING

Integration of Oil Palm Fibre for remediation of Crude Oil Polluted Soil Environment

Ukpaka Chukwuemeka Peter, Okwu Newman Osinakachukwu

The research work was carried out to investigate the effectiveness of the oil palm fibre for remediation of crude oil polluted environment of loamy soil. Analysis was conducted to determine the characteristics of the effectiveness of the oil palm fibre on the degradation of the crude oil in loamy soil environment. X-ray fluorescence spectrometer (GC) of *Elaeis guineeensis* and *Tekena Species* were examined and the result obtained revealed the presence of the following Mg, P, Si, S, K, and Ca within the energy level of > 0 to < 250J, Ti, Mn, Fe, Co, Ni, Cu and Zn within energy level range of > 250J to < 590J, W, Au, Pb, Rb, Zr, Nb, and Mo within energy level range of > 600J to< 1200J and Ag, Cd, Sn and Sb with energy level range of > 1400J to < 1800J. The micro-organism isolated and identified were fungi species with a population of $1.78x10^{4}CFU.g^{-1}$ for *Elaeis guineeensis* and *Tekena Species* with a population of $1.2x10^{5}CFU.g^{-1}$. The bacteria isolated and identified were with a population of $8.70x10^{4}cfu.g^{-1}$ for *Elaeis guineeensis* and *Tekena Species* with a population of $9.0x10^{6}CFU.g^{-1}$. It is observed that species are very effective when used for bioremediation of polluted soil environment. The Total Petroleum Hydrocarbon (TPH) in the loamy soil sample was examined for 0 to 84 days to ascertain the degree of degradation upon the influence of oil palm fibre characteristics to improve the level of restoration of the polluted loamy soil. A model was developed to determine the rate of degradation of contaminant with time. The result from the model validate the experiment with improved fibre sunlight 93.1%, local fibre sunlight 97.4%, and local with improve fibre 92.8% of the loamy soil contaminants.

Discovery, 2020, 56(289), 1-15

SCIENCE

Crude oil remediation in selected soil environment of Niger Delta Area of Nigeria

Okwu, Newman Osinakachukwu, Ukpaka, Chukwuemeka Peter

A pilot study was conducted on three different soil type contaminated with crude oil using the application of bio-simulation to examine the effect of the stimulant on the rate of degradation of the crude oil by the indigenous microbes. The contaminated soil was remedied with the application of the *Aloe vera* juice deficient of the essential nutrients which are needed to boast the activities of the microbes which feed on the crude. These nutrients are found in *Aloe vera* juice thereby making it a bio-stimulant. This research shows high efficiency in bioremediation of over 70% with bio-stimulate whereas the sample without the stimulant was found to be 45% within 30 days. The kinetic model developed can be used in monitoring, predicting and simulating the rate of degradation of hydrocarbons present in a polluted soil undergoing bioremediation under the influence of this stimulant.

Discovery, 2020, 56(289), 16-25

New derivatives of phenolic compounds as index of olive oil quality

Shaker M Arafat, Marwa A Abd-Elfatah, Aml M Tageldeen

The purpose of this study was to carried out identify of some bioactive derivatives of phenolic compounds as evidence of the quality of olive oil. Olive oil extracted from olive fruits (Coratina and Picual varieties) during season 2017/2018 at two stage ripening (mid. October and mid. December). Moisture and oil contents (%) in olive fruits were determined. Some Physicochemical properties (refractive index, color index free fatty acids, peroxide value, UV absorbance at 232 and 270 nm and ΔK were determined. Identify of fatty acids composition by GC were determined. Oxidative stability, total polyphenols, tocopherols, organoleptic evaluation and same bioactive derivative by NMR of olive oil extracted from all samples were studied. All results indicated that there were a wide variation in the chemical and characteristics of all olive oils samples. Also, the results showed clear differences in phenolic content, oxidative stability and phenolic compounds between olive oil samples. Using the NMR was identified of some bioactive compounds in different in olive oil samples.

Discovery, 2020, 56(289), 26-35

MEDICINE

Histological and Morphometric Studies of the Effect of Monosodium Glutamate (MSG) on the Cardiac Muscle Fibres of Adult Albino Rats

Kingsley A. Okon, Akpan U. Ekanem, Gabriel D. Edem, Martha Orendu Attah

This research was to determine the histological effect of monosodium glutamate (MSG) on the cardiac muscle fibres of adult albino rats. Thirty (30) albino rats were divided into five (5) groups (A-E) of six rats each at random and administered orally with aqueous solution of MSG daily. Group A served as the control group and received normal saline. Group B served as the low dose group and received 4mg/kg body weight of MSG for 28 days. Group C served as the high dose group and received 8mg/kg body weight of MSG for 14days, while group D served as the high dose group and received 8mg/kg body weight of MSG for 28 days and group E served as the high dose group and received 8mg/kg body weight of MSG for 28 days and allowed for another 28 days post treatment to observe for reversibility, persistence or delayed occurrence of any toxicity. The aqueous solution of MSG was at the

concentration of 80g/litre daily for the periods of fourteen (14) days and twenty-eight (28) days respectively. At the end of the experimental period, the animals were anaesthetized using chloroform, sacrificed and the heart was carefully removed and weighed before fixing in 10% formalin. The heart tissue was then processed for paraffin sectioning. Administration of MSG to rats showed a significant ($p < 0.05$) increase in the thickness of myocytes, width of extracellular spaces and muscle fibers discontinuity with severity increasing with doses and time of exposure. Withdrawal of MSG for 28 days showed some degree of recovery by a reduction in thickness of myocytes and extracellular spaces as well as muscle fibers discontinuity. There was increase in size and number of fibroblasts when compared with the control. These findings suggest that the histological organization of the cardiac muscle fibers can significantly be altered with continuous and/or increased used of MSG.

Discovery, 2020, 56(289), 36-43

ARTS & HUMANITIES

Indian Trains & the Persistence of the Communal Holocaust as Portrayed in Films by the Indian Diaspora: An Analysis of the Film *Train to Pakistan* by Pamela Rooks

Manju Sharma

Indian trains are the mode of transportation for the common masses in India. Trains also harbor the culture of mobility. They represent a microcosm that is representative of the common Indian population. Any episode of communal violence on a train brings back the haunting memories of the communal carnage and bloodshed that occurred during the partition of India in 1947. The communal violence in Gujarat was triggered by a Muslim mobs' torching of two train cars carrying Hindu activists on February 27, 2002. Any episode of violence on the Indian trains becomes the harbinger of the outbreak of gory violence and brutal bloodshed evoking the memories of partition of India. The partition of India had long been forgotten as an inevitable part of the freedom struggle until the 1984 Hindu-Sikh riots following the assassination of the then prime minister Indira Gandhi by her Sikh bodyguards. This episode forced the writers, cinematographers to reassess the nuances of communal violence. With the rise of the Hindu fundamentalism in the 1980s India witnessed recurrent episodes of communal violence. Premeditated attacks on the trains carrying innocent masses have been witnessed persistently and the realistic portrayal of such mindless violence on trains as by Pamela Rooks in her film came at a relevant time when India & Pakistan need to comprehend the true socio-political dynamics of communal violence. Aesthetic texts like literature and film enable us to interrogate the narratives of cultural memory; they are the representations of everyday life that often mark the limits of historicist and social scientific accounts of such experiences. They enable us to understand the dark aspects of our communal history that have been state instigated. They also offer hope for the future generations by enabling them to understand the repercussions of such communal violence.

Discovery, 2020, 56(289), 44-49

Tantra teaching in Bali

Relin DE

The concept of Tantra developed in Bali come from the principles of Shiva and Shakti. Shiva is the passive aspect and Shakti is the active aspect. Shiva and Shakti are one and the same but in different aspects. This principle was later symbolized mystically. The concept of union between Shiva and Shakti is described as Ardhanareswari and in certain respects be regarded as Maithuna. The principle is then used as the foundation of worship in Tantra. The ultimate worship is centralized to Sakti, a feminine nature; although in principle Shiva and Shakti are not different. In Bali, these principles are translated into a form of ritual offerings. Banten is a symbol of the manifestation of God. The priest who led the ceremony giving mantras and mudras, so the mystical forces that are expected being materialize. Mystical power is expected to maintain the balance of nature and could have avoided all danger.

Discovery, 2020, 56(289), 50-58

SCIENCE

Effect of pollution due to human activities at Naka dam Benue State, Nigeria

Joseph T Utsev, Oloche R Ekwule

This study aims at determining the pollution effect of human activities at Naka dam Benue State Nigeria in order to ascertain the level of water quality of the dam. In carrying out the study, three samples each were collected from upstream, middle stream and downstream of the dam. Physico-chemical and bacteriological analysis was done to obtain parameters such as temperature (32.20 – 32.80)^{0}c, color (40.00 – 93.70) pt color, turbidity (19.90 – 35.70) NTU, suspended solids (16.30 – 27.30) mg/l, total dissolved solid (30.70 – 34.70) mg/l, total solids (48.30 – 62.00) mg/l, conductivity (71.70 – 75.30) Ns/cm, pH (6.8 – 8.4), hardness (66.70 – 86.7) mg/l, nitrates (40.5 – 56.5) mg/l, sulphates (36.70 – 40.0) mg/l, chlorides (36.00 – 44.20) mg/l, biological oxygen demand (72.30 – 80.70) mg/l, biochemical oxygen demand (144.00 – 159.30) mg/l, $DO_{2\ (1)}$ (5.20 – 5.50), $DO_{2(5)}$ (4.30 – 5.00), E coli (53.00 – 161.70) x 10^{-5}cfu, salmonella typhi (0.30 – 3.30) x 10^{-5}cfu, and vibro chlorella (0 x $10^{-}5$) cfu. It was observed that the water was highly polluted in comparison with world health organization standard (WHO) and not suitable for drinking. Hence human activities around the dam should be monitored properly.

Discovery, 2020, 56(289), 59-65

Growth performance traits of meat-type chicken progenies from a broiler line sire and Nigerian indigenous chickens' dams reared in southern guinea savanna condition of Nigeria

Amao SR

The genetic improvement in animal breeding could either through selection or breeding methods and the inherit potential of Nigerian indigenous chickens could further improved through these tools. This study was designed to determine the effect of chickens' genotype on the growth performance characteristics of the chicken progenies resulting from Arbor acre broiler sire line and Nigerian indigenous chicken dams (Arbor acre x Naked neck- AANN), (Arbor acre x Fulani ecotype-AAFE) (Arbor acre x Frizzled feather- AAFF) and (Arbor acre x normal feather-AANF) crosses. Data obtained on body weight, body length, breast girth, keel length, thigh length, shank length, wing length, feed intake, weight gain and feed conversion ratio in a Completely Randomized Design were analysed using one-way analysis of variance for the fixed effect of chicken genotype. Growth performance characteristics were significantly affected ($P < 0.05$) by chickens' genotype. Progenies resulting from mating of Arbor acre x Naked neck- AANN chickens had the highest body weight (1390 g), body length (17.35 cm), keel length (8.29 cm), shank length (5.55), breast girth (20.75 cm), thigh length (15.32 cm), wing length (17.89 cm), consumed lesser feed (0.48 g), gain more of weights (0.90) and better feed conversion ratio than other chickens' genotype. However, the relationships between the body weight and other linear body measurements including the feed intake, weight gain and FCR of these crossbred chickens revealed positive and very highly significant ($P<0.001$) correlations. In conclusion therefore, the genetic superiority exhibited by the crosses of Arbor acre x naked neck when compared with other crossbreds could be exploited to speed up the growth performance of indigenous chicken towards having Nigerian indigenous broiler line and the correlations among these traits prove to be an indication of pleiotropism action and good indicator for selection for improvements in one trait in an animal.

Discovery, 2020, 56(289), 66-73