

Abstract of Animal Research International (2006) Volume 3 Number 2

Animal Research International (2006) 3(2): 439 – 447

PRODUCTION OF SOME VIRULENCE FACTORS UNDER DIFFERENT GROWTH CONDITIONS AND ANTIBIOTIC SUSCEPTIBILITY PATTERN OF *Aeromonas hydrophila*

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ABSTRACT

The production of some virulence factors under different growth conditions and antibiotic susceptibility pattern of Aeromonas hydrophila were investigated in this study. The virulence factors tested on the isolates included haemolytic activity, exopolysaccharide (capsule) and toxin production. Other cell property evaluated was antibiotic resistance. Of the several chemotherapeutants tested, streptomycin had Minimal Inhibitory Concentration (MIC) and Minimal Cidal Concentration (MCC) at 25 µg/ml; flumequine, MIC 15 µg/ml and MCC 20 µg/ml; nitrofurantoin, MIC 20 µg/ml and MCC at 20 µg/ml; chloramphenicol, MIC 15 µg/ml and MCC 30 µg/ml and nalidixic acid, MIC 25 µg/ml, MCC 30 µg/ml, respectively. Virulence characteristics were apparent from the study; the properties exhibited such as β-haemolytic activity ($F = 1.32551$; $p < 0.001$) and toxin production ($F = 0.141$; $p > 0.05$) were evidence of the pathogenic potential of A. hydrophila.

Keywords: Virulence, Haemolytic activity, Susceptibility, Antibiotics, *Aeromonas hydrophila*

***Fasciola gigantica* IN ONITSHA AND ENVIRONS**

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ABSTRACT

The presence of Fasciola gigantica in cattle slaughtered in Onitsha abattoir and three other abattoirs in Onitsha area of Anambra State, Nigeria was investigated from November to December 2004. The study involved actual post-mortem inspection on the slaughtered cattle. The liver were examined for Fasciola by making length wise incision on the ventral side of the liver in such a way that the bile duct and gall bladder are cut open. All cases of Fasciola were detected from the liver. Afor-Igwe abattoir recorded the prevalence rate of 10.8% while the prevalence rates of 7.0%, 7.7% and 13.4% were recorded at Nkwor-Ogidi abattoir, Oye Olisa abattoir and Onitsha main market abattoir respectively. Out of a total of 1580 cattle examined, 166(10.51%) were infected with F. gigantica. Of the 166 diseased liver, 26(15.7%) had light worm load, 77(46.4%) medium worm load and 63(38%) had heavy worm load. The lowest number of worm recovered per liver was 3 while the highest was 88. This study has established the presence of F. gigantica in Onitsha Area. It was also observed that most diseased liver were not condemned. This situation calls for serious attention of the veterinary workers in the state. In view of the fact that these cattle which were brought from the Northern part of Nigeria were made to trek to places of pasture (near streams and rivers) within Onitsha area where the snail intermediate host of the parasite thrives, it is suggested that grazing of cattle should be highly restricted to lesser snail infected areas. The range land system (Artificial pasture land) seems to be the panacea to fascioliasis in cattle.

Keywords – *Fasciola gigantica*, Cattle, Liver, Onitsha

EFFECT OF ECOSYSTEM CHANGES ON AIR-BORNE AND VEGETATION-DWELLING ARTHROPODS IN AGU-AWKA AREA OF AWKA

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ABSTRACT

The study on the impact of ecosystem changes on air-borne and vegetation-dwelling arthropods was carried out in the Agu-Awka area of Awka, Anambra State capital. Areas investigated were roadsides, cultivated agricultural, built-up, uncultivated agricultural and forest sites using the sweep net for arthropods on vegetation and the sticky trap for air-borne flying arthropods. The forest site acted as control. Ecosystem changes from close forest to open environments reduced species richness for vegetation-dwelling arthropods but increased the species richness of air-borne arthropods. For the vegetation-dwelling fauna, the forest site recorded 14 species while the disturbed built-up sites had only 4 species. The differences between the sites were significant ($P <$

0.05). For the air-borne arthropods, there were no species in the forest while the highest number of species (7) was recorded in the uncultivated agricultural sites. The differences over the study sites for air-borne species were not significant ($P > 0.05$). The ecosystem change decreased significantly the species abundance of vegetation-dwelling arthropods from 42 in the forest to 14 in the built-up sites ($P < 0.05$), while the species abundance of air-borne fauna was significantly increased from 0 in the forest to 43 in the uncultivated agricultural sites ($P > 0.05$). The species diversity for the vegetation-dwelling arthropods decreased significantly from 0.856 in the forest to 0.384 in the built-up sites ($P < 0.05$), while it increased significantly from 0.000 in the forest to 0.611 in the uncultivated agricultural sites for the air-borne arthropods ($P < 0.05$). For the vegetation-dwelling arthropods, 6 insect species and 6 spider species were dominant in the sites that had undergone environmental changes while 1 insect species and 3 spider species were dominant in the forest. For the air-borne fauna, no species was found in the forest while 7 insect species were dominant in the sites which had experienced ecosystem changes.

Keywords: Ecosystem change, Flying insects, Vegetation-dwelling arthropods, Agu-Awka

Animal Research International (2006) 3(2): 457 – 460

HAEMATOLOGICAL AND BIOCHEMICAL EFFECTS OF SULPHADIMIDINE IN NIGERIAN MONGREL DOG

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ABSTRACT

Haematological and biochemical effects of sulphadimidine were studied in Nigerian mongrel dogs. Five Nigerian mongrel dogs of either sex weighing between 7 and 12 kg were used for the study. The pre-treatment blood and serum samples were collected and the weight of animals taken before the administration of 100 mg/kg body weight for a period of 7 days. The animals were weighed daily. The results showed that there was no significant difference between preadministration and post administration weights ($P > 0.05$) of dogs. Packed cell volume decreased significantly ($P < 0.05$) with duration sampled dogs. Liver function test revealed significant decrease ($P < 0.05$) of total bilirubin and alkaline phosphatase. Other indices of liver function and electrolytes indices were normal ($P > 0.05$). The mean weight gain ($8.8 \pm 2.04 \text{ kg}^a$) of the animals before sulphadimidine administration was comparable with the weight gain ($8.77 \pm 0.89 \text{ kg}^b$) of animals after the sulphadimidine administration. Sulphadimidine caused anaemia of moderate value ($26.4 \pm 3.36\%^a$) in the treated samples as compared to pre-treated samples (46.4 ± 6.27^b). Total bilirubin ($12.32 \pm 1.4 \mu\text{mol}^a$) in pre-treatment samples was decreased in comparison with treated ($18.5 \pm 2.0 \mu\text{mol}^b$) samples. Alkaline phosphatase was decreased in preadministration samples ($114.2 \pm 5.7 \mu\text{g}/\text{P}$) as compared to post administration samples ($130 \pm 9.61 \mu\text{mol}/\text{P}$). Therefore long-time administration of sulphadimidine in anaemic mongrel dogs may aggravate anaemic condition. Sulphadimidine may increase renal excretion of bilirubin and decrease bone mineralization in mongrel dogs during bone formation.

Keywords: Haematology, Biochemical effect, Sulphadimidine, Nigerian Mongrel, Dog

Animal Research International (2006) 3(2): 461 – 465

LENGTH-WEIGHT RELATIONSHIP AND CONDITION FACTOR OF DISTICHODUS SPECIES OF ANAMBRA RIVER

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ABSTRACT

The length-weight relationships (LWRs) and condition factor of Distichodus 169 Distichodus rostratus, 167 D. brevipinnis and 163 D. engycephalus from Anambra river were investigated from November 2004 to October 2005. LWRs showed that the b-values for the combined sexes were 3.051, 3.114 and 3.040 for D. rostratus, D. brevipinnis and D. engycephalus respectively. Thus, all the Distichodus species exhibited isometric growth with high, positive and significant correlations. The mean condition factor for the combined sexes was 1.12 ± 0.48 , 1.06 ± 0.22 and 0.94 ± 0.33 for D. Rostratus, D. brevipinnis and D. engycephalus respectively. Except for D. brevipinnis, there was no significant difference ($P > 0.05$) in the condition factor (K) between the males and females of other species. The condition factor also demonstrated interseasonal variability in all the species. The importance of condition factor in the breeding activities of Distichodus species is discussed.

Keywords: *Distichodus*, Length-weight relationships, Condition factor

Animal Research International (2006) 3(2): 466 – 472

TOXICITY, GROWTH AND SURVIVAL OF *Clarias gariepinus* JUVENILES EXPOSED TO DIFFERENT CONCENTRATIONS OF CRUDE OIL FRACTIONS-POLLUTED WATER

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ABSTRACT

Studies were carried out on the toxicity, growth and survival of Clarias gariepinus juveniles exposed to different concentrations of oil-polluted water. Thirty-nine aerated aquaria (60 × 30 × 30 cm³), arranged in a 4 × 3 Complete Randomized Block Design were used for the study. Three oil types: the Bonny light crude oil (BLCO), the premium motor spirit (PMS) and kerosene (DPK) at oil concentrations of 1.00, 1.50, 2.00 and 2.50 ml L⁻¹ were used in triplicates of 5 ml to contaminate 15 L of dechlorinated tap water and 20 fingerlings of Clarias gariepinus (22 ± 0.24 g) exposed to it. A control treatment (0.00 ml L⁻¹) of non-oil contamination was also used in triplicates. A 96-hour toxicity phase in the oil-polluted water preceded a 42 days recovery phase. 38% crude protein diet was fed to fish during exposure and recovery phases at 3% and 5% body weight per day, respectively. Water temperature, pH, fish mortality and normalized biomass index (NBI) of each aquarium were monitored. The total organic nitrogen, soluble organic nitrogen and colloidal organic nitrogen in addition to soluble and adsorbed ammonia in the aquaria water and sediments were analyzed using standard methods. Results showed that the water temperature was 26 ± 2.04° C, pH was 6.50 ± 0.30 and fortnightly feed intake of fish increased between days 14 and 42. This increase, which corresponded

with the increase in the fortnightly weight gain, could be attributed to the reduction of stress caused during the 96-h toxicity phase. The increase in the soluble ammonium and the exchangeable ammonium concentrations of water correlated with the increase in the concentrations (1.50 – 2.50 ml L⁻¹) of BICO, PMS and DPK. Percent mortality of fish reduced between days 14 and 42 irrespective of oil treatment while fish exposed to the control treatment had lower percent mortality than those exposed to the oil treatments. This trend was corroborated by the relatively higher NBI for the control during the exposure (-0.02) and recovery {0.08 (14 days), 0.08 (38 days) and 0.21 (42 days)} periods than those of oil treatments (-49.64 to -0.10).

Keywords: *Clarias gariepinus*, Toxicity, Soluble ammonium, Feed intake, Weight gain

Animal Research International (2006) 3(2): 473 – 477

MANAGEMENT TECHNIQUES FOR REVITALIZATION AND EFFECTIVE UTILIZATION OF YINAGU RIVER IN MADAGALI LOCAL GOVERNMENT AREA OF ADAMAWA STATE

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ABSTRACT

The study examined the management techniques towards the revitalization and effective utilization of the resources of Yinagu river in Madagali LGA of Adamawa State. A total of 200 fishermen aged between 45 years and above were sampled using semi-structured interviews and closed ended questionnaires from January 1998 to December 2003. Factors affecting fish production in Yinagu river were identified in their order of perceived importance as the use of nets of small mesh size (73.5%), poaching (60.0%), flooding (40.0%), rainfall (34.0) and blockage of the river tributaries (18.0%). The management techniques employed to effectively utilize the resources of Yinagu river include the specification of fishing sites, use of two seasonal fishing, use of rituals, local administration, creation of buffer zones between the water body and sites of farming activities among others.

Keywords: Management, Revitalization, Effective utilization, Yinagu river, Productivity, Exploitation

Animal Research International (2006) 3(2): 478 – 480

EFFECT OF SMOKE-DRYING ON THE PROXIMATE COMPOSITION OF *Tilapia zillii*, *Parachanna obscura* AND *Clarias gariepinus* OBTAINED FROM AKURE, ONDO-STATE, NIGERIA

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ABSTRACT

*The proximate composition of fresh, smoked and deteriorated fish samples (*Tilapia zillii*, *Parachanna obscura* and *Clarias gariepinus*) were determined using standard methods of analyses. It was revealed that *Tilapia zillii* contained; moisture 4.11 - 67.33 %, protein*

20.10 – 65.90 %, ash 3.41 – 14.64 %, fat 4.44 – 7.73 % and carbohydrate 4.72 – 11.89 %, *Parachanna obscura* had moisture 6.47 - 68.61%, protein 18.23 – 64.67%, ash 2.68 – 13.20 %, fat 3.55 – 8.87 % and carbohydrate 6.79 – 10.25 %, while *Clarias gariepinus* produced moisture 4.61- 56.99%, protein 17.21 – 68.05%, ash 4.82 – 15.32 %, fat 4.79 – 8.19% and carbohydrate 1.92 – 17.35%. It was observed that smoke drying methods increased the protein, ash and fat contents of the samples. The low fat content observed for the deteriorating sample might be due to rancidity with the resultant rancid odour.

Keywords: *Tilapia zillii*, *Parachanna obscura*, *Clarias gariepinus*, Smoke-drying, Proximate composition

Animal Research International (2006) 3(2): 481 – 484

PHYTOCHEMICAL CHARACTERIZATION AND BIOCHEMICAL STUDIES OF *Cissus multistriata* EXTRACT ADMINISTERED TO *Rattus norvegicus*

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ABSTRACT

The leaves of Cissus multistriata were collected, air-dried for two weeks and pulverized into powder; this was followed by extraction with either chloroform or water. The phytochemical screening of the extracts revealed the presence of carbohydrates, proteins, vitamin C, saponins, steroids, cardiac glycosides, lipids and vitamin E; whereas balsam, anthraquinone, tannins, alkaloids, cardenolides and phlobactannin were completely absent. The aqueous extract was administered to the experimental rats at doses of 100, 200, 800, 1600, 3200, and 6400 mg/kg body weight for three weeks. The control group was injected 5 ml physiological saline 3 times daily for 21 days. The test animals showed appreciable body weight increase when compared with the control group. The body weight increase was dose dependent. Analysis of the blood samples for enzymes activities, (indicators for the possible damage to the liver and kidney) showed that the leaf extract was slightly toxic to these organs. Measurement of enzymes activities revealed that lactate dehydrogenase, alkaline phosphatase, acid phosphatase, alanine and aspartate amino transferases activities were observed to have increased throughout with increase in dosage of the extract down the group. A part from the enzymes, other renal and hepatic profiles were monitored which included serum urea, creatinine, albumin and bilirubin. There was increase in the renal and hepatic profiles monitored and the increase was dose dependent. The result of this investigation indicated that prolonged use and at a high dosage of the extract could be deleterious to the liver and kidney.

Keywords: *Cissus multistriata*, Vitaceae, liver, kidney, albino rats, enzymes, analytes

SERO-EPIDEMIC SURVEY OF HEPATITIS B IN A POPULATION OF NORTHERN NIGERIA

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ABSTRACT

The rates of infection of various hepatitis B virus serological markers were measured on the basis of age, sex and socio-economic activities amongst the community population of Mubi, a known border community in North-Eastern Nigeria. Sera of 992 subjects consisting of 613 males and 379 females were analysed by radioimmunoassay. The overall HBV exposure among the subjects surveyed was 40.3 %. The rate of HBsAg infection was 9.0 %; 19.0 % for anti-HBs and 12.2 % for anti-HBc. The occurrence of HBV markers by age of the subjects showed that infants less than 1 year old had the highest HBV exposure rate of 43.9%; the rate declined at the 1-10 years age group and increased steadily thereafter with age until the ≥ 51 years age bracket. The incidence of the HBV markers by sex of subjects showed that infection rates were higher in males (43.4%) than in females (35.4%). The rate of HBs infection rose progressively with age and significantly higher ($p < 0.01$) in males (20.1%) than in females (17.2 %). The infection rate of HBc did not correlate with increase in age and significantly higher ($P < 0.01$) in males (13.2 %) than in females (10.8%). The distribution of the HBV markers was associated with differences in socio-cultural environment and practices (Fig. 2); thus, prison inmates who constituted the bulk of commercial blood donors had the highest rate of infection (28.5 %), followed by traders/artisans (21.0%) and students/pupils (18.0%). This study suggests vertical (maternal to infant) and horizontal transmission early in life in the spread of HBV markers in Mubi area and recommends passive active HB immunization (anti-HB vaccine), personal and urban hygiene and that testing for HBsAg by the most sensitive methods should be required for all blood donors. HBsAg-carriers and People who are known to have the infection or to be at high risk e.g. prostitutes, prisoners, etc should be discouraged from donating blood.

Keywords: Hepatitis, Radio-immunoassay, Immunization, Cirrhosis, Serological-markers, Morbidity

Animal Research International (2006) 3(2): 489 – 493

PREVALENCE OF GASTRO-INTESTINAL PARASITES IN RELATION TO AVAILABILITY OF SANITARY FACILITIES AMONG SCHOOLING CHILDREN IN MAKURDI, NIGERIA

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ABSTRACT

*The prevalence of gastro-intestinal parasites in school children in relation to availability of sanitary facilities was investigated. Stool samples from 580 pupils from nine schools in Makurdi were examined for intestinal parasites. Sanitary facilities available within the schools were also noted. The overall prevalence rate of parasitic infection was 54.13%. Pupils in schools that had lower ratio of number of pupils per toilet had lower infection rates than those from schools with high ratio of number of pupils per toilet. This was however not statistically significant ($\chi^2 2.272$, $df = 2$, $P > 0.05$). The following parasites were encountered, namely *Ascaris lumbricoides* (11.89%), *Ancylostoma duodenale* (18.62 %), *Strongyloides stercoralis* (1.89%), *Trichuris trichura* (4.65%), Tapeworm (3.79 %), *Entamoeba histolytica* (7.06 %), *Schistosoma mansoni* (1.55 %) and *Entamoeba coli* (2.41 %). The implications of these results were discussed highlighting the need for provision of sanitary facilities: like children friendly toilets, portable water and fencing the school premises from trespassers as long-term intervention strategies. Occasional activities like mass school based chemotherapy and health education are recommended as immediate intervention strategies to prevent and control intestinal parasites.*

Keywords: Intestinal parasites, School children, Sanitary facilities

Animal Research International (2006) 3(2): 494 – 504

SOCIO-ECONOMIC IMPACT OF ONCHOCERCIASIS WITH PARTICULAR REFERENCE TO FEMALES AND CHILDREN: A REVIEW

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ABSTRACT

The socio-economic impact of onchocerciasis (river blindness) on humans is reviewed with special reference to females and children. The results of many studies reveal that onchocerciasis is usually a serious threat to public health and an impediment to socio-economic development in areas with high intensity and high endemicity of the disease. In such places, blindness and serious visual impairment are common, and mortality among the blind may be four times as high as among non-blind persons of the same age in the same community. As a result of debilitation and blindness, the infected person is unable to maintain for long any type of productive activity. Inhabitants of fertile river valleys move to the less fertile upland country. Many young men migrate to urban areas, reducing the productivity of the community and disrupting family life. Employees classified as having a severe Onchocercal Skin Disease (OSD) earned 15 % less in daily wages than those not infected. People with Onchocercal Skin Disease are stigmatized in their communities. OSD limits the range of social involvement and can affect sexual life of affected individuals. With reference to women and children, young females with OSD suffer stigmatization more than young men. This affects their age of marriage and the kind of partners they marry, limiting them to already married men, divorced men, elderly men, childless men, etc. Severe itching that often accompanies OSD may reduce the period lactating mothers breastfeed their babies. Children, particularly females, from households headed by individuals with onchocerciasis, especially blindness and OSD are more at risk of being school dropouts. Academic performance of school children with visual impairment is adversely affected. To reduce these effects, there is need for intense public enlightenment to augment the efforts of World Health Organization (WHO) in combating the disease using mass treatment with ivermectin (Mectizan).

Keywords: Onchocerciasis, Onchocercal skin disease, Stigmatization, Visual impairment