1 Theriogenology
(2008) 69 :870–876

Effects of catecholamines on ovary morphology, blood concentrations of estradiol-17b, progesterone, zinc, triglycerides and rate of ovulation in domestic hens

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Abstract

The present study is an attempt to shed more light on the role of epinephrine (EP) and norepinephrine (NE) in regulating ovarian follicular development, folliculogenesis and ovulation in laying hens. Sixty Egyptian local cross females (Mandarah), 50 weeks old, were individually housed and equally divided into three treatments: control (saline, 0.9% NaCl), EP (0.15 mg epinephrine/hen/day) and NE (0.75 mg norepinephrine/hen/day) (n = 20). Animals were injected intramuscularly once a day for 15 successive days. At the end of the experimental period, 10 females from each treatment were randomly chosen, weighed and killed by decapitation. Ovaries and oviducts and ovarian follicles were examined. Plasma concentrations of estradiol-17b, progesterone, zinc and triglyceride were determined. Results indicated that the ovaries of NE- and EP-treated hens were more developed than those of control hens being heavier and containing more yellow yolk-filled follicles. EP or NE significantly increased the ovulation rate and plasma concentrations of estradiol-17b, progesterone, zinc and triglyceride compared with control treatment. It could be concluded that catecholamines may have a part in promoting ovarian follicular development and in stimulating ovulation in laying hens at the end of their reproductive lives.

2 Tree Genetics & Genomes
(2008) 4:611–623

Phylogeography of Larix sukaczewii Dyl. and Larix Sibirica L. inferred from nucleotide variation of nuclear genes

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Abstract

We investigated phylogeography of Larix sukaczewii and Larix sibirica using nucleotide variation at three following nuclear gene regions: 5.8 S rDNA including two internal transcribed spacers (ITS), cinnamyl alcohol dehydrogenase (CAD), and phytochrome-O (PHYO). We also included sequences of the 4-coumarate: coenzyme A ligase (4CL) gene region obtained in our recent study. CAD and PHYO showed very low nucleotide variation, but ITS and 4CL had levels of variation similar to those reported for other conifers. Pleistocene refugia have been hypothesized to exist in the Southern Urals and South Central Siberia, where four out of nine of the investigated populations occur. We found moderate to high levels of population differentiation (FST=0.115–0.531) in some pairwise comparisons suggesting limited gene flow and independent evolution of some refugial populations. In L. sukaczewii, low levels of differentiation were found among populations from areas glaciated during the Pleistocene, indicating their recent origin. Our results also suggest these populations were created by migrants from multiple, genetically distinct refugia. Furthermore, some haplotypes observed in populations from previously glaciated areas were not found in putative refugial populations, suggesting these populations might have contributed little to the extant populations created after the Last Glacial Maximum. Some authors regard L. sukaczewii and L. sibirica as a single species, while others consider them as separate species. The observed conspicuous differences in haplotype composition and distribution between L. sukaczewii and L. sibirica, together with high values of FST between populations of the two species, appear to support the latter classification.

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Genes Genet. Syst.
(2008) 83 : 55–66

Phylogeography of Eurasian Larix species inferred from nucleotide variation in two nuclear genes

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Abstract

Larch (Larix Mill.) is one of the most widely distributed tree genera in Eurasia. To determine population structure and to verify classification of five species and three varieties of the Eurasian Larix species, we investigated levels and patterns of nucleotide variation of two nuclear gene regions: the 4-coumarate coenzyme A ligase (4CL) and the coumarate 3-hydroxylase (C3H). In the 4CL region nucleotide diversity at silent sites (□sil) varied between 0.0020 in L. Gmelinii to 0.0116 in L. gmelinii var. japonica and in the C3H region between 0.0019 in L. kaempferi to 0.0066 in L. gmelinii var. japonica. In both gene regions statistically significant population differentiation (FST) was detected among adjacent refugial populations of some species suggesting limited gene flow and/or long time isolation of some refugial populations. On the other hand, populations of L. sukaczewii from northwestern Russia, which was glaciated 20,000 years ago showed no differentiation. This result is consistent with recent postglacial origin of these populations. Haplotype composition of some of the investigated Eurasian Larix species suggested that they are considerably diverged. Some haplotypes were unique to individual species. Our results indicate that more intensive sampling especially from known refugial regions is necessary for inferring correct classifica-tion of Eurasian Larix species and inferring their postglacial migration.

4 Acta Biologica Szegediensis
(2008) 52 : 27-31

In vitro propagation of two triploid hybrids of watermelon through adventitious shoot organogenand shoot tip culture

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Abstract

In vitro propagation protocol for two triploid hybrids of watermelon using cotyledon explants and shoot tips was achieved. Five benzyladenine (BA) concentrations were tested using cotyledon and shoot tip explants. Cotyledon explants and shoot tips from 6 and 15-20 days aseptically germinated were cultured on Murashige and Skoog medium (MS) containing testconcentration of benzyladenine (2.22, 4.44, 10, 24.61 and 44.4 µM). Adventitious hoot organogenesis was initiated in all induction media and the differences among BA concentration were significant. MS medium containing 4.44, 10 and 24.61 µM BA showed the highest percentage of explants with shoots. The stimulation of axillary-bud development from excised shoot tips by a high cytokinin (BA) was observed. Axillary shoots were obtained from shoot tips of triploid watermelon and the multiplication rate ranged from 2 to 5.6 plants dependence on benzyladenine concentration and genotype. Obtained data showed that variation in regeneration rate was demonstrated. Shoots were excised and elongated in MS medium without hormones. The elongated shoots were rooted in MS medium containing 0.1 µM -naphthalene acetic acid (NAA). Rooted plants were successfully acclimatized and gradually hardened-off to green-house onditions and subsequently established in soil with a survival rate of 80%.

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Environmental and Experimental Botany
(2008) 63 : 297–304

Effect of carbon dioxide on antioxidant enzymes and ginsenoside production in root suspension cultures panax ginseng

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Abstract

The aim of this study was to investigate the effect of CO2 at various concentrations (1, 2.5 and 5%) on antioxidant enzymes and ginsenoside accumulation in Panax ginseng roots in 5 l airlift bioreactors (working volume 4 l). One and 2.5%CO2 was beneficial for root biomass accumulation,but 5% CO2 decreased the biomass. Ginsenoside concentration decreased with increasing concentration of CO2. No significant difference was observed in the malondialdehyde (MDA) content and lipoxygenase (LOX) activity between respective controls and CO2 treated roots. Antioxidantenzymes such as ascorbate peroxidase (APX), monodehydroascorbate reductase (MDHAR), glutathione reductase (GR), catalase (CAT), guaiacol peroxidase (G-POD) including reduced ascorbate and total glutathione were induced in CO2 exposed roots which emphasized the protective role of antioxidants against CO2 induced stress. Superoxide dismutase activity (SOD) which was induced after 15 days was significantly inhibited after 45 days. Glutathione-S-transferase (GST) and glutathione peroxidase (GPX) activities also increased when the roots were subjected to 1 and 2.5%CO2 compared to the respective controls but not at 5%. A higher reduced ascorbate to oxidized (ASC/DHA) ratio in CO2 treated root indicatesthe plant's ability to tolerate CO2 stress. These observations suggest that an increase in antioxidant enzymes may affect a defense response to the cellular damage induced by CO2. Probably, this increase could not stop the deleterious effects of CO2 concentration on ginsenoside concentration, but reduced stress severity and thereby allowing root growth to occur.

6 Plant Growth Regul
(2008) 54:157–164

Kinetics of nutrient utilization and photosynthetic enzyme activities during floral versus vegetative differentiation of Spathiphyllum in air-lift bioreactor cultures

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Abstract

The present study reports on the kinetics of nutrient utilization during in vitro flowering of Spathiphyllum in air-lift bioreactor cultures.Levels of electrical conductivity (EC), anions and cations, pH, ethylene, sugar content and photosynthetic enzymes were determined in bioreactor cultures of both flowering (FPs) and non-flowering (NFPs) plantlets over a growth period of 12 weeks.A decrease in ribulose 1,5-bisphosphate carboxylase/ oxygenase (Rubisco) activity with a corresponding increase in phosphoenolpyruvate carboxylase (PEPcase) activity occurred during floral induction of Spathiphyllum in vitro. Sucrose concentration decreased significantly in FPs, while no changes in glucose, fructose and total sugars were observed in both FPs and NFPs up to 8 weeks of culture. There were significant variations in mineral nutrient utilization between FP and NFP cultures.These results provide an insight to the physiological processes involved in inflorescence formation in Spathiphyllum

7 World Rabbit Sci.
(2008) 16: 157-164

DIETARY GRAPE POMACE AFFECTS LIPID PEROXIDATION AND ANTIOXIDATIVE STATUS IN RABBIT SEMEN

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Abstract

The objective of this study is to evaluate the effect of dietary grape pomace (GP) on certain characteristics,mainly lipid peroxidation and the antioxidative status of rabbit buck semen. Twenty seven adult New Zealand White rabbit bucks (6 months of age) were divided into three homogeneous groups (n=9) and randomly submitted to one of the three investigated dietary treatments. Animals in the . rst treatment (control) group were given the basal diet. The diets of the second (GP-10) and third (GP-20) treatment groups contained 10 and 20% of GP, respectively. Bucks received the experimental diets for 10 continuous weeks. GP did not appear to have any signi. cant effect on body weight gain. Bucks receiving 10 or 20% dietary GP had a higher semen volume, 32% above that of rabbits in the control group ($P<0.05$). The same trend was observed for sperm count. Dietary GP reduced the percentage of dead sperm and enhanced sperm motility. Interestingly, GP reduced lipid peroxidation in seminal plasma as indicated by TBARS, and signi. Cantly increased both the total antioxidant capacity and glutathione peroxidase activity ($P<0.05$). In conclusion, the use of antioxidant dietary . bers rich in functional nutraceuticals (such as GP) may decrease lipid peroxidation and increase the antioxidative defense of rabbit semen.

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International Journal of Horticultural Science
(2008) 14 (3): 39–44

Role of hydrogen peroxide and Pharmaplant-turbo against cucumber powdery mildew fungus under organic and inorganic production

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Abstract

Cucumber leaves have been sprayed with a solution of hydrogen peroxide (H2O2) or Pharmaplant-turbo combined with organic or inorganic fertilizers under plasic house. Under the influence of H2O2, leaves exhibited resistant against Podoshaera fusca fungus, the causal agent of cucumber powdery mildew. H2O2 (15 mM) was able to decrease the disease severity from 90.4% to 12% in two experiments conducted in two seasons. Pharmaplant-turbo (Turbo) is new chemical compound and used as an antifungal compound. Turbo in 1 ml/L was able to decrease the disease severity from 90.4% to 11.5% in the both experiments as well. Both of H2O2 and Turbo were combined with organic treatment (compost + compost tea + seaweed extracts) which showed significant effect against cucumber powdery mildew fungus and strongly suppressed it as compared to control leaves. Organic treatment produced higher vegetative growth characters and greater early and total yields as compared to inorganic treatment, also organic fruits produced the lower nitrate content and the higher ascorbic acid content as compared to inorganic fruits. Our study have indicated that, H2O2 and Turbo combined with organic fertilizers play a role in the resistance of cucumber against powdery mildew by decreasing the disease severity.We suggest to give more attention to the direct application of H2O2 in low concentration and Turbo against powdery mildew diseases and other plant diseases.

9 Journal of General Virology
(2008) 89: 799–808

Suppression of tobacco mosaic virus-induced hypersensitive-type necrotization in tobacco at high temperature is ssociated with down regulation of NADPH oxidase and superoxide and stimulation of dehydroascorbate reductase

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Abstract

Tissue necroses and resistance during the hypersensitive response (HR) of tobacco to tobacco mosaic virus (TMV) are overcome at temperatures above 28 6C and the virus multiplies to high levels in the originally resistant N-gene expressing plants. We have demonstrated that chemical compounds that generate reactive oxygen species (ROS) or directly applied hydrogen peroxide (H2O2) are able to induce HR-type necroses in TMV-inoculated Xanthi-nc tobacco even at high temperatures (e.g. 30 6C). The amount of superoxide (O2$”) decreased, while H2O2 slightly increased in TMV- and mock-inoculated leaves at 30 6C, as compared with 20 6C. Activity of NADPH oxidase and mRNA levels of genes that encode NADPH oxidase and an alternative oxidase, respectively, were significantly lower, while activity of dehydroascorbate reductase was significantly higher at 30 6C, as compared with 20 6C. It was possible to reverse or suppress the chemically induced HR-type necrotization at 30 6C by the application of antioxidants, such as superoxide dismutase and catalase, demonstrating that the development of HR-type necroses indeed depends on a certain level of superoxide and other ROS. Importantly, high TMV levels at 30 6C were similar in infected plants, whether the HR-type necrotization developed or not. Suppression of virus multiplication in resistant, HR-producing tobacco at lower temperatures seems to be independent of the appearance of necroses but is associated with temperatures below 28 6C

10 Acta Biologica Szegediensis
(2008) 52(1) :17-25

Effectiveness of the antifungal black seed oil against powdery mildews of cucumber (Podosphaera xanthii) and barley (Blumeria graminis f.sp. hordei)

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Abstract

When cucumber and barley leaves were sprayed with 0.5% black seed oil (BSO), rapeseed oil (R oil) and parafine oil (P oil), disease severity of the powdery mildew of cucumber (*Podosphaera xanthii*) was reduced from 52% (control) to 7.7% (BSO), 18.6% (R oil) and 20% (P oil). Similarly the disease severity of barley powdery mildew (*Blumeria graminis* f.sp. *hordei*) was greatly reduced from 63.4% (control) to 9.4% (BSO), 16% (R oil) and 16.4% (P oil). Oils inhibited the conidial germination of cucumber and barley powdery mildews to 29-30.7, 35-38 and 37-41% respectively, as compared to control (58-65%). Furthermore, mycelial growth of the pathogen was severely restricted after application of BSO and other oils. Levels of hydrogen peroxide (H2O2) and superoxide (O2.-) as well as the activity of the antioxidant enzymes in the treated leaves with oils and untreated (control) were measured and determined. H2O2 and O2.- levels slightly increased, however some antioxidants are decreased such as dehydroascorbate reductase (DHAR) but other enzymes were increased such as ascorbate peroxidase (APX) and glutathione S transferase (GST). It can be concluded that the protective effect of oils against owdery mildews resulted mainly from the inhibition of conidial germination and suppression of the mycelial growth of the pathogens and there is slight activation of the host defence mechanisms. Therefore, it is important to giving more attention to BSO and other oils which have effectiveness against powdery mildew pathogens as an alternative control methods which safety and suitable for healthy and organic food production. Acta Biol Szeged 52(1):17-25 (2008)

11 Animal
(2008) 2 : 84–91

Ovarian follicular development, lipid peroxidation, antioxidative status and immune response in laying hens fed fish oil-supplemented diets to produce n-3-enriched eggs*

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Abstract

The objective of the present study was to research the effect of feeding laying hens fish oil-supplemented diets to produce n-3-enriched eggs on their ovarian follicular development, serum lipid peroxidation, antioxidative status and immune response.A total of 105 white Bovens hens at 24 weeks of age were housed in cages in an open-sided building under a 16 h light : 8 hdark lighting schedule. Birds were randomly divided into five treatments and were fed, ad libitum, diets containing 0%(control), 1.25%, 2.5%, 3.5% or 5.0% fish oil from 24 to 36 weeks of age. Egg production and weight were recorded. By weeks 35 and 36 of age 15 eggs were taken at random from each treatment to determine the yolk lipid profile and cholesterol content. At the end of the experimental period, 10 females from each treatment were randomly chosen, anaesthetised and killed by decapitation. Ovary and oviduct samples were immediately weighted and ovarian follicles were classified. Serum thiobarbituric acid-reactive substance (TBARS), hepatic TBARS and hepatic glutathione peroxidase (GSH-Px) activity were measured. No clear trend was observed concerning egg production and egg yolk cholesterol. As dietary fish oil levels increased, n-3-polyunsaturated fatty acids (n-3 PUFA) increased, whereas n-6 PUFA tended to decrease in yolk lipids. No negative effects were detected in ovary and oviduct weights, expressed in both absolute terms and relative to body weight. The numbers and total weights of large yellow follicles (LYF) in the ovary were not significantly affected by fish oil supplementation. Low levels(1.25% to 2.5%) of fish oil reduced both plasma and hepatic TBARS and enhanced GSH-Px activity. It is also interesting to note that inclusion of 2.5% fish oil in laying hen diets enhanced the antibody titre in laying hens. Therefore, it could be concluded that inclusion of fish oil in laying hen diets at moderate levels increased the n-3 fatty acids content in eggs, improved antioxidative status, enhanced the antibody response and did not have a negative influence on the different reproductive morphology parameters in laying hens.

12 International Journal of Horticultural Science
(2008) 14(3) :45 - 50

Using compost of grape manufacture and farm wastes as growing media in vegetable ad ornamental nurseries

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Abstract

This work was conducted at private nursery in Kafr El-Sheikh governorate during 2006 and 2007 seasons to investigate the possibility of using grape manufacture waste compost (GMWC) and farm wastes compost (FWC) in ornamental and vegetable nurseries as partially or totally replacement of coconut peat (CP) and vermiculite (V) in the growing medium and also to find out the optimum media of tomato (***Lycopersicon esculentum***, cv. Castle Rock) and Cockscomb (***Celosia plumosa***) as comparing to a mixture of CP and V (1:1 v/v). The authors used a ten mixtures as followed: 1- Control (CP+V at 1:1 v/v), 2- GMWC (100 %), 3- GMWC +CP (1:1 v/v), 4- GMWC + V(1:1 v/v),5- GMWC +CP + V (1:1:1 v/v/v), 6- FWC (100 %),7- FWC+ CP (1:1 v/v), 8- FWC+ V (1:1 v/v), 9- FWC+ CP+ V (1:1:1 v/v/v), 10- GMWC+FWC+CP+V (1:1:1:1 v/v/v/v). Data recorded as seedling height, No. of leaves, total pigments, shoot fresh and dry weights, root length and root fresh and dry weights in order to assess the quality of both transplants of tomato and cockscomb. Both seedlings grown in medium contain a mixture of GMWC+CP+V displayed quality traits similar or better as to those of recorded from the control treatment.

13 Acta Biologica Szegediensis
(2008) 52(1) :7-15

Improvement of postharvest keeping quality of white pepper fruits (Capsicum annuum, L.) by hydrogen peroxide treatment under storage conditions

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Abstract

Sweet pepper is one of the most important vegetable crops in the world, it hasexcellent nutritive value but it is susceptible to relatively fast quality changes after harvest time.The objective of the present research was to evaluate the effect of dipping pepper fruits in hydrogen peroxide solutions on postharvest keeping quality during storage time. Whole pepper fruits were soaked for 30 min in a solutions of hydrogen peroxide (0, 1, 5 and 15 mM) then, air dried and stored at room temperature (20^{o}C) for 2 weeks and in fridge (10^{o}C) for 4 weeks.
Hydrogen peroxide treatments significantly reduced weight loss, rot rate index and nitrate content of fruits specially with 15 mM hydrogen peroxide as compared with control treatement (0 mM hydrogen peroxide). Moreover, hydrogen peroxide treatments significantly increased general appearance, ascorbic acid content and the activity of the antioxidant enzymes such asascorbate peroxidase and dehydroascorbate reductase. For dry matter and TSS%, there are no significant differences among treatments. Therefore, the use of hydrogen peroxide in postharvest treatments have a good potential strategy to improve the postharvest quality, extend shelf life period and maintained some nutritional quality as well as inhibited decay development of white peppers which natural infected under storage conditions.Acta Biol Szeged 52(1):7-15 (2008)

14 Crop Protection
(2008) 27 :653–659

Control of Orobanche crenata in legume intercropped with fenugreek (Trigonella foenum-graecum)

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Abstract

Grain legume production in the Mediterranean Area is threatened by the holoparasitic plant Orobanche crenata, to which little resistance is available in affected crops. Control strategies have centred around agronomic practices and the use of herbicides, although success has been marginal. Several authors have described fenugreek as a suitable crop for intercropping with legumes, reducing the infection level of O. crenata; however, there is an important lack of experimental data and of a systematic research of the mechanisms involved in the reduction of parasitic infection. Two years of field experiments and further investigation by mini-rhizotron and pot experiments showed a decrease of O. crenata infection due to an allelopathic interference on the parasitic life cycle at the level of germination. Inhibition of O. crenata seed germination by allelochemicals released by fenugreek roots is suggested as the mechanism for reduction of O. crenata infection.

15 J. Phytopathology
(2008) 156 :419–424

Genetic Variation Among and Within Uromyces Species Infecting Legumes

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Abstract

Genetic variation of 30 different Uromyces isolates collected on faba bean, lentil, common vetch, pea, chickpea, alfalfa, cowpea and lupin was studied. Random Amplified Polymorphic DNA markers were used showing clear differences among Uromyces species.Uromyces viciae-fabae isolates clustered according to the host, with a clear cluster including all U. viciaefabae ex Vicia faba isolates. The U. viciae-fabae ex Lens culinaris isolate was the nearest to the cluster of U. viciae faba ex V. faba isolates, followed by U. pisi from Canada and U. viciae-fabae ex V. sativa. No association was found among molecular diversity and virulence or geographic origin within U. vicia-fabae ex V. faba isolates. Among the three U. pisi isolates considered, a great variability was observed and no grouping could be established. The most different isolate from the rest of species considered was U. striatus, followed by U. vignae. The two U. ciceris-arietini isolates clustered together and so did the two U. lupinicolus isolates.

16 Plant Pathology
(2007) **56 :** 356

First report of sugar beet crown wart disease caused by Urophlyctis leproides in Egypt

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Abstract

Leaf and crown wart, marbled or beet root tumour are some of the common names given to a disease of sugar beet (Beta vulgaris) caused by Urophlyctis leproides(formerly Physoderma leproides). It was first reported in Algeria in 1894 (Trabut, 1894). Since then, the disease has been recorded in Argentina, Italy, Spain, United Kingdom, Palestine and theUSA (Whitney, 1971). In Egypt, the disease was observed during harvest (2003, 2004, 2005) at three locations in the Nile Delta (Behira, Gharbia and Kafr El-Sheikh) on a range of sugar beet cultivars (Gloria, Kawmera, Oscar poly, Othus poly and Pleno). Disease incidence (DI) was less than 1% in 2003, 1–2% in 2004 and 3% in 2005. Although the DI is currently low, if the trend observed over the last few years continues, the disease could reach epidemic levels in the near future. The disease exhibited typical symptoms on root crowns and occasionally on petioles and leaf blades. Galls on leaf blades and petioles are greenish brown and have a rough appearance. Affected leaves are malformed. On the crown, galls range in size from 1 cm to (most commonly) 8–10 cm. These galls are spherical, rough and are attached to the host by a narrow base. Gall colour was variable, ranging from shades of green through yellow to brown depending on the age of plant cultivar. Galls occurred singly or coalesced to form complexes. Sections made spores) surrounded by thickened wall. Sporangia were light brown, spherical to ovoid or concave (25 ± 5 × 40± 5μm) in diameter (Ruppel, 1995). As the gall decomposes, resting sporangia are released into the soil. Soil surveys were carried out in the affected areas and detected resting Twenty seedlings of B. vulgaris cv. Gloria were inoculated with 10 5 resting spores mL −1and incubated 22 ±2 ° C in continuous fluorescent light for 48 h, followed by 14 h light and 10 h dark. Uninoculated plants were used as a control. Symptoms appeared on the test plants after 11 days and sporangia were reisolated from the mature gall tissues (Mahmoody et al ., 1997). No symptoms were observed on uninoculated controls.This is the first report of sugar beet crown wart disease (U. leproides)affectingB. Vulgaris in Egypt. sporangia.

17

Journal of Applied Horticulture
(2007) 9(2): 112-115

Rooting and growth response of grapevine nurslings to inoculation with arbuscular mycorrhizal fungi and irrigation intervals

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Abstract

This study was conducted during two successive seasons (2005 and 2006); in the experimental farm of Faculty of Agriculture, Kafr El Sheikh University; with the aim to investigate the in uence of arbuscular mycorrhizal fungi (AMF) inoculation and irrigation intervals on growth of grapevine nurslings cv. Ruby King. Two mix mycorrhizal fungi including Glomus fasiculatum and Glomus mosseae were used for inoculation. The AMF inoculated and non-AMF nurslings were irrigated at 3, 6 and 9 days. The results showed that a combined treatment of AMF inoculation and irrigation at 3 days intervals recorded the highest values in terms of length of main root, total root length, root volume, root dry weight (%), top/root ratio, number of ne roots (< 2 mm), number of small roots (2-5 mm), number of leaves and leaf area per nursling. These results are of practical importance, as they highlight the potential of using mycorrhizal fungi inoculation for root development and growth improvement in grapevine nurslings and hence increases its adaptability upon transfer from the nursery to the open eld.

18 Chemistry and Ecology
(2008) 24 :169–180

Biodegradation kinetics of cymoxanil in aquatic system

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Abstract

A potential method to detoxify pesticides in aquatic system is using bioremediation. In this study, four microorganisms (Pseudomonas sp (EB11), Streptomyces sp. (EB12), Aspergillus niger (EB13) and Trichoderma viride (EB14) were isolated from cucumber leaves previously treated with cymoxanil using enrichment technique. These strains were evaluated for their potential to detoxify cymoxanil in aquatic system at the concentration level of 5 × 10−4M. The effect of pH and temperature on the growth ability of the tested strains was also investigated by measuring the intracellular protein and mycelia dry weight for bacterial and fungal strains, respectively. Moreover, the remaining toxicity of cymoxanil after 28 days of incubation with tested strains was evaluated to confirm the complete removal of any toxic materials (cymoxanil and its metabolites). The results showed that the optimum pH for the growth of cymoxanil degrading strains (bacteria and fungi) was 7. A temperature of 30◦C appears to be the optimum for the growth of either fungal or bacterial strains. Pseudomonas sp. (EB11) was the most effective strain in cymoxanil degradation followed Streptomyces sp (EB12), Trichoderma viride (EB14) and Aspergillus niger (EB13), with half-lives of 4.33, 9.5, 17.3 and 24.7 days, respectively. The degradation of cymoxanil by bacterial strains was much faster than fungal one. There is no remaining toxicity of cymoxanil detected in aqueous media previously treated with Pseudomonas sp. (EB11) for 28 days. The results suggest that bioremediation by Pseudomonas sp. (EB11) are promising for the detoxification of cymoxanil in aqueous media.

19 hemosphere
(2008) 71 :2173–2179

Fate of imidacloprid in soil and plant after application to cotton seeds

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Abstract

This study aimed to investigate the persistence of imidacloprid in soil after application to cotton seeds and to obtain a complete picture on the mass balance of this compound in soil and cotton plants. The study was carried out as a pot culture experiment under laboratory conditions using a Gaucho formulation containing 14C-labeled imidacloprid. Three treatments of cotton seeds were made in sandy loamy soil: live seeds grown in autoclaved soil, dead seeds put in live soil and live seeds grown in live soil. Results showed that total 14C recoveries decreased by time ranging 93.8–96.2, 77.1–88.4 and 53.5–62.4% of the applied radioactivity at 7, 14, and 21 d after application, respectively. The reduction in the extracted 14C from soil coincided with the increase of non-extracted ones. Levels of bound 14C was always less in autoclaved soil than in live ones. Results revealed also that only 1.8–6.8% of the applied 14C was taken up by the plants and fluctuated within the test period. 14C levels were higher in plants grown in autoclaved soil than those in live ones and the radioactivity tended to accumulate on the edges of cotton leaves. Most of the radioactivity in the soil extracts was identified as unchanged 14C-imidacloprid. _ 2007 Elsevier Ltd. All rights reserved.

20 Journal of Environmental Sciences
(2008) 20 :262–267

Microbial detoxification of metalaxyl in aquatic system

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Abstract

Four microorganisms, Pseudomonas sp. (ER2), Aspergillus niger (ER6), Cladosporium herbarum (ER4) and Penicilluim sp. (ER3), were isolated from cucumber leaves previously treated with metalaxyl using enrichment technique. These isolates were evaluated for detoxification of metalaxyl at the recommended dose level in aquatic system. The effect of pH and temperature on the growth ability of the tested isolates was also investigated by measuring the intracellular protein and mycelia dry weight for bacterial and fungal isolates,respectively. Moreover, the toxicity of metalaxyl after 28 d of treatment with the tested isolates was evaluated to confirm the complete removal of any toxic materials (metalaxyl and its metabolites). The results showed that the optimum degree pH for the growth of metalaxyl degrading isolates (bacterial and fungal isolates) was 7. The temperature 30° C appeared to be the optimum degree for the growth of either fungal or bacterial isolates. The results showed that Pseudomonas sp. (ER2) was the most effective isolate in metalaxyl degradation followed by Aspergillus niger (ER6), Cladosporium herbarum (ER4) and Penicilluim sp. (ER3), respectively. There is no toxicity of metalaxyl detected in the supernatant after 28 d of treatment with Pseudomonas sp. (ER2). The results suggest that bioremediation by Pseudomonas sp. (ER2) isolate was considered to be effective method for detoxification of metalaxyl in aqueous media.

21 Land Contamination & Reclamation, (2008) 16 (1) :13-23

Biodegradability of famoxadone by various microbial isolates in aquatic systems

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Abstract

Bioremediation is defined as the process whereby organic wastes are biologically degraded under controlled conditions to an innocuous state, or to levels below concentration limits established by regulatory authorities. In this study, four microorganisms (Pseudomonas sp. (EB1), Aspergillus niger (EB2), Cladosporium herbarum (EB4) and Penicillium sp. (EB3) were isolated from cucumber leaves previously treated with famoxadone, using an enrichment technique. These isolates were evaluated for the detoxification of famoxadone at the concentration level of 100 μg mL–1 in an aquatic system. The effects of pH and temperature on the growth of the tested isolates were also investigated by measuring the intracellular protein and mycelial dry weight for bacterial and fungal isolates, respectively. Moreover, the toxicity of famoxadone after 28 days of treatment with the tested isolates was evaluated to confirm the removal of any toxic materials (i.e. famoxadone and its metabolites). The results showed that the optimum pH for the growth of famoxadone-degrading isolates (i.e. bacterial and fungal isolates) was pH 7. A temperature of 30°C appears to be optimal for the growth of either fungal or bacterial isolates. Isolates of Pseudomonas sp. (EB1) and Aspergillus niger (EB2), were the most effective isolates in famoxadone degradation, followed by isolates of Cladosporium herbarum (EB4) and Penicillium sp. (EB3), respectively. A slight toxicity of famoxadone against A. solani as a sensitive target was detected in the supernatant treated byPseudomonas sp. (EB1), Aspergillus niger (EB2) and Penicillium sp. (EB3) as compared with the control. The results suggest that bioremediation of famoxadone by Pseudomonas sp. (EB1), Aspergillus niger (EB2) and Penicillium sp. (EB3) is promising for the detoxification of famoxadone in aqueous media. Moreover, the tested microorganisms isolated from cucumber leaves may be able to significantly reduce the residue level of famoxadone in vegetable crops to below the maximum limit, especially under greenhouse conditions.

22 Contribuţii Botanice
(2008) 43 : 135-140

MOLECULAR VARIABILITY OF EGYPTIAN AND HUNGARIAN BOTRYTIS CINEREA ISOLATES

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Abstract

An attempt was made to evaluate the variation between Hungarian and Egyptian isolates of Botrytis cinerea on the basis of molecular studies. Sequences from the minisatellites MSB1 and the widely used molecular marker in phylogenetic works, the translation elongation factor 1 subunit alpha (EF-1α=tef1), were identified. The phylogenetic analysis was conducted with PAUP*4.0b by parsimony analysis. Topological robustness in parsimony analysis was estimated using 1000 bootstrap replicates. Our results show that two of the three studied Egyptian isolates of B. cinerea have been proved to be similar to the Hungarian ones on the basis of both minasatellites and tef1 sequences while the remaining one was completely different. The similarity between Hungarian and Egyptian isolates might be due to phylogenic relationship or conidial dispersal between both countries.

23 Contribuţii Botanice
(2008) 43 : 141-147

MYCOPARASITISM AND ANTAGONISTIC EFFICIENCY OF TRICHODERMA REESEI AGAINST BOTRYTIS SPP.

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Abstract

A preliminary study was made to evaluate the antagonistic effeciency and mycoparasitic activity of Trichoderma reesei against Botrytis species, viz. B. cinerea, B. allii and B. fabae. The bioassay method to evaluate the efficacy of Trichoderma reesei was the reduction of mycelial growth of Botrytis spp. in vitro. Significant effect was observed against B. cinerea and B. fabae, however, no effect was found against B. allii. Hyphal and sclerotial parasitism of Trichoderma reesei against Botrytis spp. were also studied. Coiling of hyperparasite fungus, penetration into B. cinerea hyphae, and stunt of the latest were observed as typical signs of mycoparasitism. Coiling of B. allii and stunted hyphae of B. fabae were the only signs of hyphal parasitism observed. The sclerotia of B. cinerea were also parasitized but sclerotia of B. allii and B. fabae were not

24 J Mater Sci
(2007) 42 :9717–9724

Elastic deformation of the rotating functionally graded annular disk with rigid casing

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Abstract

An accurate solution for a rotating functionally graded annular disk is presented. Material properties of the present annular disk are assumed to be graded in the radial direction according to a simple exponential-law distribution. The inner surface of the disk is pure metal whereas the outer surface of the disk is pure ceramic. The boundary condition of rigid casing is considered herein, that is the vanishing of the radial displacement at the outer surface. The boundary condition at the inner surface of the disk is taken to be vanishing either radial displacement or radial stress. Analytical solutions for the elastic deformation of the rotating functionally graded annular disks subjected to these boundary conditions are obtained. Numerical results for radial displacement, circumferential and radial stresses are presented. Comparisons between the different rotating homogeneous and functionally graded annular disks are made at the same angular velocity. The results show that distributions of stresses and displacement through the radial direction of the rotating annular disk vary with different parameters

25 J Mater Sci
(2008) 43 :2574–2589

Thermoelastic bending analysis of functionally graded sandwich plates

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Abstract

The thermoelastic bending analysis of functionally graded ceramic–metal sandwich plates is studied. The governing equations of equilibrium are solved for a functionally graded sandwich plates under the effect ofthermal loads. The sandwich plate faces are assumed to have isotropic, two-constituent material distribution through the thickness, and the modulus of elasticity, Poisson's ratio of the faces, and thermal expansion coefficients are assumed to vary according to a power law distribution in terms of the volume fractions of the constituents.

The core layer is still homogeneous and made of an isotropic ceramic material. Several kinds of sandwich plates are used taking into account the symmetry of the plate and the thickness of each layer. Field equations for functionally graded sandwich plates whose deformations are governed by either the shear deformation theories or the classical theory are derived. Displacement functions that identically satisfy boundary conditions are used to reduce the governing equations to a set of coupled ordinary differential equations with variable coefficients. The influences played by the transverse normal strain, shear deformation, thermal load, plate aspect ratio, side to thickness ratio, and volume fraction distribution are studied. Numerical results for deflections and stresses of functionally graded metal–ceramic plates are investigated.

26 Applied Mathematics & Information Sciences
(2008) 2(3) : 237–257

The Rotating Inhomogeneous Elastic Cylinders of Variable-Thickness and Density

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Abstract

In this paper, an analytical solution is developed for the rotation problem of an inhomogeneous orthotropic cylinder with variable-thickness and density under plane strain assumption. The thickness of the cylinder and the elastic constants are taken as exponential functions in the radial direction but the density in a power law form. The cylinder may be solid or hollow with traction-free surface or clamped. On application of the boundary conditions, the stress and displacement for rotating homogeneous isotropic solid and hollow cylinders with uniform-thickness and density are obtained as special cases of the studied problem. Numerical results for stresses and displacement are presented in graphical forms. The effects of many parameters on stresses and displacement are investigated.

27 Appl. Math. Mech. -Engl. Ed
(2008) **29**(12) :1601–1616

Elastic and viscoelastic solutions to rotating functionally graded hollow and solid cylinders

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(Communicated by GUO Xing-ming)

Abstract

Analytical solutions to rotating functionally graded hollow and solid long cylinders are developed. Young's modulus and material density of the cylinder are assumed to vary exponentially in the radial direction, and Poisson's ratio is assumed to be constant. A unified governing equation is derived from the equilibrium equations, compatibility equation, deformation theory of elasticity and the stress-strain relationship. The governing second-order differential equation is solved in terms of a hypergeometric function for the elastic deformation of rotating functionally graded cylinders. Dependence of stresses in the cylinder on the inhomogeneous parameters, geometry and boundary conditions is examined and discussed. The proposed solution is validated by comparing the results for rotating functionally graded hollow and solid cylinders with the results for rotating homogeneous isotropic cylinders. In addition, a viscoelastic solution to the rotating viscoelastic cylinder is presented, and dependence of stresses in hollow and solid cylinders on the time parameter is examined.

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Two-Dimensional Free Energy Surfaces for Electron Transfer Reactions in Solution

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Abstract

Change in intermolecular distance between electron donor (D) and acceptor (A) can induce intermolecular electron transfer (ET) even in nonpolar solvent, where solvent orientational polarization is absent. This was shown by making simple calculations of the energies of the initial and final states of ET. In the case of polar solvent, the free energies are functions of both D-A distance and solvent orientational polarization. On the basis of 2-dimensional free energy surfaces, the relation of Marcus ET and exciplex formation is discussed. The transient effect in fluorescence quenching was measured for several D-A pairs in a nonpolar solvent. The results were analyzed by assuming a distance dependence of the ET rate that is consistent with the above model.

29 LMSA_A_345542 803.cls
(2008) 25 1:25

Immobilization of Urease on (HEMA/IA) Hydrogel Prepared by Gamma Radiation

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Abstract

In the present study, the copolymeric hydrogels based on 2-hydroxyethyl methacrylate (HEMA) and itaconic acid (IA) were synthesized by gamma radiation induced radical polymerization, in order to examine the potential use of these hydrogels in immobilization
of Citrullus vulgaris urease. Gelation and Swelling properties of PHEMA and copolymeric P (HEMA/IA) hydrogels with different IA contents (96.5/3.5, 94.4/5.6 and 92.5/7.5 mol) were studied in a wide pH range. Initial studies of so-prepared hydrogels show interesting pH sensitivity in swelling and immobilization. C. vulgaris urease was immobilized on HEMA/IA (92.5/7.5) at 6 kGy with 41.3% retention of activity. The properties of free and immobilized urease were compared. Immobilized urease maintained a higher relative activity than free urease at both lower and higher pH levels, indicating that the immobilized urease was less sensitive to pH changes than the free urease. The Km value of the immobilized urease was approximately 2 times higher than that of the free urease. Temperature stability was improved for immobilized enzyme. The free formexhibited a loss about 80% of activity upon incubation for 15 min at 80◦C. The influence of various heavy metal ions at the concentration of l mM was improved after enzyme immobilization. The immobilization of C. vulgaris urease on HEMA/IA (92.5/7.5) at 6 kGy showed a residual activity of 47 % after 4 reuses.

3٠ LMSA_A_351712 803.cls
(2008) 46 : 1-9

Hybrid Nanocomposite Prepared by Graft Copolymerization of 4-Acryloyl morpholine onto Chitosan in the Presenc of Organophilic Montmorillonite

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Abstract

Organophilic montmorillonite (OMMT) was synthesized by cationic exchange between Na-MMT and Vinyl benzyl triphenyl phosphonium chloride in an aqueous solution. A new nanocomposite consisting of 4-acryloyl morpholine-chitosan and OMMT was prepared by γ -ray irradiation polymerization. The intercalation spacing of these nanocomposites was investigated with X-ray diffraction and its thermal stabilities by adding nanocomposites were characterized by thermal gravimetric analysis. The nanocomposites showed improved resistance to water absorption. The most interesting application of the nanocomposite is its ability for adsorption purification of waste water containing acid dyes. One of the objectives in this study was to develop new and active prepared copolymers which can be examined for their antimicrobial activities. It was found that the copolymer nanocoposite based on phosphonium group and some heavy metal ions in its structure having broad spectrum against pathogenic bacteria such as Staphylococcus aurius, Escherichia coli and Aspergillus flavus fungi .

٣١

Reactive & Functional Polymers
(2008) 68 : 1680–1693

Convenient approaches for the synthesis and characterization of well-defined linear-dendritic diblock copolymers having a definite number of peripheral primary amino groups: Exact control of numbers introduced and dendritic distribution to enhance co-operative effect

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Abstract

Efficient and convenient approaches have been developed to prepare a wide array of welldefined linear-dendritic diblock copolymers having a definite number of peripheral primary amino groups by utilizing linear polystyrenes end-functionalized with a definite number of dendritic benzyl bromide and/or benzyl alcohol functionalities as precursory polymers. Various approaches including modified Gabriel synthesis, Michael addition and alkylation reactions have been developed for their synthesis. The resulting primary amine-end-functionalized copolymers always exhibited SEC profiles showing asymmetric long-tailed distributions and their true molar masses were obtained after the acetylation of their peripheral dendritic amino groups with acetyl chloride. All the resulting copolymers possessed well-defined linear-dendritic diblock architectures, with controlled molecular weights. In these polymer series, the molecular weight of linear polystyrene chains remained almost unchanged (Mn _ 19.3 kg/mol), while the dendritic blocks increased in both size and molecular weight as the number of peripheral dendritic end-functional groups was increased. The resulting copolymers were fully characterized by elemental, FT-IR, TLC–FID, GPC, 1H and 13C NMR analyse

٣٢ Tetrahedron: Asymmetry
(2008)19 : 425–434

Application of well-defined chain-end functionalized polystyrenes with dendritic chiral ephedrine moieties as reagents for highly catalytic enantioselective addition of dialkylzincs to aldehydes

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Abstract

A series of well-defined chain-end-functionalized polystyrenes having a definite number of chiral ephedrine moieties dendritically distributed at the periphery of their hyperbranched chain-ends were evaluated as chiral catalysts for the enantioselective addition of dialkylzinc reagents to aldehydes. These dendritic macromolecules worked well as homogeneous chiral catalysts and exhibited high catalytic activity and enantioselectivity very similar to those observed for the corresponding monomeric chiral catalysts. The optimum amount of chiral catalyst was found to be 5 mol %. A profound number effect of the chiral ephedrine moieties was observed, and PS(Ephed)8 having eight chiral ephedrine moieties at the periphery was found to be superior to other dendritic chiral catalysts. The enantioselectivity reached a value of 95% in the addition of diisopropylzinc to 3-phenylpropanal. The dendritic chiral catalysts could be easily recovered from the reaction solution by using a solvent precipitation method, and the recovered catalyst showed no significant loss of its catalytic activity or enantioselectivity.

33 hem. Pharm. Bull.
(2008) **56** (12)**:** 1651-1657

Development and Validation of an Adsorptive Stripping Voltammetric Method for the Quantification of Vincamine in Its Formulations and Human Serum Using a Nujol-Based Carbon Paste Electrode

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Abstract

An easy, rapid and selective adsorptive stripping voltammetry (AdSV) method for the determination of vincamine in its formulation and human serum was developed and validated. It was based on the oxidation of the drug onto a Nujol-based carbon paste electrode. The stripping step was carried out by using a square-wave (SW) potential-time voltammetric excitation signal. The optimal experimental variables as well as accumulation parameters were investigated as; frequency f_120 Hz, scan increment DEi_10mV, pulse-amplitude DEa_25mV and an accumulation potential Eacc of 0.0 V using a Britton–Robinson (B-R) universal buffer of pH 5 as a supporting electrolyte. After validation of the described method, it was applied for determination of vincamine in its formulation and human serum. Mean recovery of 100.41_0.74 (n_5) was achieved for assay of vincamine in Oxybral® capsules. Limits of detection and quantitation of 6.0_10_9M (2.20 ng ml_1) and 2_10_8M (7.33 ng ml_1) vincamine were achieved in human serum with a mean recovery of 99.5_1.79%, without prior extraction of the drug. No interferences were observed in formulation and/or human serum. Due to high sensitivity and specificity of the developed method, it was successfully applied for evaluating some pharmacokinetic parameters of two healthy volunteers after administration of a single oral Oxybral® capsule.

34 J Appl Electrochem
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Simultaneous determination of trace aluminum (III), copper (II) and cadmium (II) in water samples by square-wave adsorptive cathodic stripping voltammetry in the presence of oxine

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Abstract

A validated adsorptive cathodic stripping voltammetry method is described for simultaneous determination of Al(III), Cu(II) and Cd(II) in water samples. In acetate buffer (pH 5) containing 10 lM oxine, these metal ions were determined as oxine complexes following adsorptive accumulation onto the HMDE at -0.05 V versus Ag/AgCl/KCls. The best signal to noise ratio was obtained using a square wave of scan increment 10 mV, frequency 120 Hz, and pulse-amplitude 25 mV. Limits of detection as low as 0.020 lg L-1 Al(III), 0.012 lg L-1 Cu(II) and 0.028 lg L-1 Cd(II) were achieved. Interference due to various cations (K(I), Na(I), Mg(II), Ca(II), Mn(II), Fe(III), Bi(III), Sb(III), Se(IV), Pb(II), Zn(II), Ni(II), Co(II)), anions (Cl-, NO3-, SO4 2-, PO4 3-) and ascorbic acid was minimal as the measured signals change by 4% at the maximum. The stripping voltammetry method was successfully applied for simultaneous determination of Al(III), Cu(II) and Cd(II) in tap and natural bottled water samples.

35 Talanta
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Development of a voltammetric procedure for assay of the antihistamine drug hydroxyzine at a glassy carbon electrode: Quantification and pharmacokinetic studies

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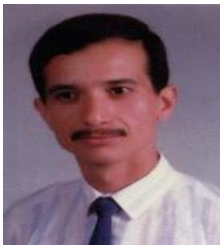
Abstract

An electrochemical study of hydroxyzine at a glassy carbon electrode was carried out in the Britton–Robinson universal buffer of pH 2–11. Hydroxyzinewas oxidized in a single two-electron irreversible process controlled mainly by adsorption.Asimple, sensitive and time-saving squarewave adsorptive anodic stripping voltammetric procedure has been developed for determination of hydroxyzine in its commercial tablets and human serum without prior extraction. The optimized procedural conditions were: frequency = 120 Hz, scan increment = 10mV, pulse-amplitude = 25mV, accumulation potential =−0.3V, accumulation time = 90–300 s and a Britton–Robinson universal buffer of pH 4 as a supporting electrolyte. Mean recoveries of 100.5±0.71 and 98.6±1.12% (n = 5) were achieved for assay of hydroxyzine in Atarax® 10 and 25 mg dosage forms, respectively. Limit of detection of 1.5×10−8 mol L−1 (5.624 ngmL−1) and limit of quantitation of 5.0×10−8 mol L−1 (18.746 ngmL−1) were achieved in human serum with a mean recovery of 98.4±1.22%, without prior extraction of the drug. Moreover, the described procedure was applied for evaluating the pharmacokinetic parameters of hydroxyzine in plasma of two healthy volunteers after administration of a single oral dose (Atarax®—25 mg).



36 Micropaleontology
(2007) 53 : 127-144

Nannofossil biostratigraphy of the Paleocene-lower Eocene succession in the Thamad area, east central Sinai, Egypt

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Abstract

In the Thamad area, east central Sinai, two stratigraphic sections are measured and sampled; Gebel El Mishiti and G. El Keeh, in order to determine the nannofossil biostratigrapy of the Paleocene-lower Eocene rocks. Gebel El Mishiti section is considered one of the most complete sections across the K/P boundary in Egypt where all the exposed rocks at G. El Keeh belong to the lower
Eocene Egma Formation. A nearly complete sucession of Paleocene nannofossil biozones is recorded from the Esna Formation at G. ElMishiti. They are arranged
from base to top as follows: *Markalius inversus* (NP1), *Cruciplacolithus tenuis* (NP2), *Chiasmolithus danicus* (NP3), *Ellipsolithus macellus* (NP4), *Fasciculithus tympaniformis* (NP5), *Heliolithus kleinpellii* (NP6), *Discoaster mohleri* (NP7/8) and *Discoaster multiradiatus* (NP9) zones. The Danian/Selandian boundary is located at the base of Zone NP5 at the level of the first appearance of *Fasciculithus* taxa. The Selandian/Thanetian boundary can be traced tentatively at the base of the *Discoaster mohleri* Zone (NP7/8). The Paleocene/Eocene boundary is traced between the NP9a/NP9b subzonal boundary which is marked by the first appearances of *Discoaster araneus*, *Rhomboaster calcitrapa, R. bitrifida* and *R.cuspis*. The Paleocene /Eocene boundary lies within the upper part of the Esna Formation. A very thin layer of conglomeratic chalk with no paleontological break is located between Zone NP9 and NP10. However, a very short nannofossil break is noted within Zone NP10 (subzones NP10b and NP10c are missing) which is overlain by Zone NP11. The
lower part of the latter covers the topmost part of the Esna Formation where its upper part lies within the base of the Egma Formation; therefore, a conformable relationship between the two formations is suggested. At Gebel El Mishiti, the lower Eocene nannofossil biozones NP11, NP12, NP13 and lower/middle Eocene Zone NP14 are recorded. On the other hand, Gebel El Keeh section, which is about 95m thick is only represented by the *Discoaster sublodoensis* Zone (NP14).

37 Parasitology Research
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The first detection of Cryptosporidium deer-like genotype in cattle in Japan

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Abstract

The general perception is that cattle are major reservoirs for *Cryptosporidium parvum* infections in humans and that *C. parvum* is a major cause of diarrhea and production loss in cattle. Adult cattle may play an important role as cryptic carrier of the infection. *Cryptosporidium* spp. in asymptomatic adult dairy cattle from some farms around Osaki area, Miyagi prefecture, Japan, was examined on a field visit during August, 2007, by polymerase chain reaction techniques for detection, genotyping, and subtyping. *Cryptosporidium* oocysts were detected in the feces of five out of 50 animals. Of the five *Cryptosporidium*-positive specimens available for molecular analysis, *C. parvum* was identified in three specimens, *Cryptosporidium* deer-like genotype in one, and *Cryptosporidium andersoni* in one specimen. Amplification of *Cpgp60 from C. andersoni* and *Cryptosporidium* deer-like genotype samples revealed that these samples have light concurrent *C. parvum* infection. Sequence analysis of the 60-kDa glycoprotein gene indicated that all *C. parvum* samples are IIa subtype. Detection of *Cryptosporidium* deer-like genotype is geographically unique in Japan. The genetic diversity of *Cryptosporidium* in dairy cattle in Japan may be much greater than that reported before.

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Downregulation of male-specific cytochrome P450 by profenofos

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Abstract

The health hazards of individual organophosphorus insecticides have been characterized by their acute toxicity, mainly by investigating their cholinesterase inhibition. However, the chronic effects of most of these toxicants on the drug-metabolizing enzymes have not been investigated. Profenofos (O-4-bromo-2-chlorophenyl O-ethyl S-propyl phosphorothioate) is an organophosphorus pesticide widely used in cotton cultivation. In the present study, we investigated the effect of profenofos on male-specific cytochrome P450 (CYP) enzymes in adult Wistar rats. We orally administered 17.8 mg/kg body weight, twice weekly for 65 days. Profenofos downregulated levels of hepatic and testicular CYP2C11 and CYP3A2 mRNA and protein expression. Testicular aromatase (CYP19A) mRNA was decreased in the profenofos-treated rats compared to controls. Overall, the present study suggests that profenofos acts as an endocrine disruptor of male-specific CYP enzymes and affects testosterone concentration, which implicates its deleterious effects on animal or human males chronically exposed to organophosphorus pesticide.

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The Induction of Cytochrome P450 1A1 by Sudan Dyes

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Abstract

Azo dyes form a major class of chemically related compounds that are ubiquitous in foods, paints, printing inks, cosmetics, and also used as biological
stains in histological and histopathological laboratories and clinics. Sudan I, sudan III, and sudan IV have been classified as category 3 carcinogens by International Agency for Research on Cancer. In this study, we investigated the difference between these three sudan dyes in induction of CYP1A1.We intraperitoneally treated Wistar rats with each of the three sudan dyes (I, III, and IV) for 3 days. Treatment ofWistar rats with sudan I produced the highest induction ofCYP1A1 protein and mRNA whereas treatment of Wistar rats with
sudan III produced about two third of CYP1A1 protein andmRNA than induced by sudan I. Furthermore, treatment of Wistar rats with sudan IV produced the lowest induction of CYP1A1 protein andmRNAwhich is about two third of that induced with sudan III treatment. We further investigated the effect of these sudan dyes on CYP1A1 transcription through investigating the xenobiotic response element (XRE) reporter activity in HepG2. The XRE reporter activity study showed the same trend of activity of sudan dyes comparable to the effects on CYP1A1 mRNA and protein. Immunohistochemical study revealed a differential pattern of distribution of CYP1A1 protein in rat liver among the three sudan dyes, apparent in the centrilobular and midzonal region with sudan III, progressing to panlobular with sudan I, whereas sudan IV showed a reversal of pattern of induction with the most intense staining in the periportal region. Our results suggest that there is an inverse relationship between the molecular size of the three sudan dyes and their ability to induce CYP1A1.

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Zoo Animals as Reservoirs of Gram-Negative Bacteria Harboring Integrons and Antimicrobial Resistance Genes

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Abstract

A total of 232 isolates of gram-negative bacteria were recovered from mammals, reptiles, and birds housed at Asa Zoological Park, Hiroshima prefecture, Japan. Forty-nine isolates (21.1%) showed multidrug resistance phenotypes and harbored at least one antimicrobial resistance gene. PCR and DNA sequencing identified class 1 and class 2 integrons and many _-lactamase-encoding genes, in addition to a novel AmpC _-lactamase gene, blaCMY-26. Furthermore, the plasmid-mediated quinolone resistance genes qnr and aac(6_)-Ib-cr were also identified.

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Proteus mirabilis clinical isolate harbouring a new variant of Salmonella genomic island 1 containing the multiple antibiotic resistance region

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Abstract

Objectives: A clinical isolate of Proteus mirabilis strain 18306, which displayed the multidrug resistance phenotype of Salmonella genomic island 1 (SGI1), was examined for the presence of this island including its multiple antibiotic resistance genomic region. Methods: P. mirabilis 18306 was isolated in March 2006 from a patient in Palestine with diabetic foot infection. Antibiotic susceptibility tests and various molecular techniques, including PCR, cloning and DNA sequencing were used for detection and characterization of SGI1 in P. mirabilis 18306. Results: P. mirabilis 18306 showed the typical multidrug resistance phenotype of SGI1 as it was resistant to ampicillin, chloramphenicol, streptomycin, sulphonamides and tetracycline, in addition to trimethoprim and nalidixic acid. Molecular characterization showed that P. mirabilis 18306 harboured a structure similar to SGI1, except that the aadA2 gene, which confers resistance to streptomycin and spectinomycin, of standard SGI1 had been replaced with dfrA15, which confers resistance to trimethoprim. Furthermore, the nucleotide sequence of the extrachromosomal circular form of SGI1 in P. mirabilis was found to be identical to that of Salmonella Typhimurium DT104. However, PCR results showed that P. mirabilis 18306 was negative for the left and right junctions which represent the integration sites of SGI1 into Salmonella enterica chromosome. Hence, this new variant of SGI1 may be integrated at a different site into the chromosome of P. mirabilis 18306. Tn1826-derived class 2 integron, which carries only two gene cassettes, sat2 and aadA1, was also identified in this strain.Conclusions: In this study, we identified a new variant SGI1 containing the multiple resistance genomicregion in a multidrug-resistant strain of P. mirabilis. This is the first report for SGI1 in a genus other thanSalmonella.

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Emergence of a cefepime- and cefpirome-resistant Citrobacter freundii clinical isolate harbouring a novel chromosomally encoded AmpC -lactamase, CMY-37

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Abstract

Citrobacter freundii strain 4306 was isolated from a urine specimen of a patient in March 2006 in Palestine. This strain showed a unique multidrug resistance phenotype, as it was resistant both to 7-_-methoxy- and oxyimino-cephalosporins, including cefepime, cefpirome and monobactams, in addition to quinolones, streptomycin and trimethoprim/sulfamethoxazole. Clavulanic acid did not act synergistically with cephalosporins by the double-disk synergy test. Molecular characterisation showed that the resistance to 7-_-methoxyand oxyimino-cephalosporins was due to a novel AmpC _-lactamase, designated CMY-37, with an isoelectric point of ~9.0. CMY- 37 is a variant of C. freundii chromosomal AmpC enzymes with at least seven amino acid substitutions. One of these substitutions, L316I, is located within the R2 loop that is considered the hotspot region responsible for the extended substrate spectrum in class C _-lactamases. The blaCMY-37 gene was cloned and expressed in Escherichia coli TG1. CMY-37 is chromosomally encoded and is not associated with ISEcp1-like element. Phylogenetic analysis suggested that CMY-37 is the origin of many plasmid-mediated AmpC _- lactamases. This study highlights the emergence of cefepime and cefpirome resistance in C. freundii owing to a new type of AmpC _-lactamase

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Ocular infection of donkeys (Equus asinus) with Setaria equine

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Abstract

Abstract Seven donkeys raised in different locations in Egypt were found to have a unilateral eye showing motile white worms in the aqueous humor. Theparasites were surgically removed from the anterior chamber of the eye in five out of the seven donkeys, and were cleared, mounted and identified as Setariaequina based on light microscopic features. The ocular infection with S. equina reported herein may be the first reported aberrant cases in the Egyptian animals.

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Cryptosporidiosis in buffalo calves (Bubalus bubalis):Prevalence and potential risk factors

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Abstract

The objective of the present study was to describe the prevalence and risk factors associated with cryptosporidiosis in buffalo calves in Middle Egypt. During one year, 458 fecal samples were collected from buffalo calves less than 3 month age in 55 small scale herds and examined for the presence of Cryptosporidium oocysts. Data describing age, gender, season, and herd management practices were gathered to assess potential risk factors. Fecal examination showed that 14.19% of the examined calves were positive for Cryptosporidium spp. Calves at 1–15 days were at the highest risk ($P<0.001$), and a significant relationship between season and infection ($P<0.05$) was recorded. A significant association between infection and hygiene ($P<0.001$), type of floor ($P< 0.01$) and source of water ($P<0.01$) was also recorded. Statistical analysis concerning the clinical signs and fecal characteristics revealed a significant association with fecal consistency ($P<0.001$), presence
of blood ($P<0.01$) and mucous ($P<0.01$). Moreover, a significant association was found between infection and the desire for suckling ($P<0.05$) and tenesmus ($P<0.05$). The results of the present study demonstrated the strong relation between infections by Cryptosporidium spp. and diarrhea in buffalo calves.

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Holding bovine oocytes in the absence of maturation inhibitors: Kinetics of in vitro maturation and effect on blastocyst development after in vitro fertilization

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Abstract

Holding immature oocytes before maturation simplifies the transport of oocytes and aids in scheduling later manipulations. We examined the effect of holding bovine oocytes in the absence of meiotic inhibitors on their subsequent meiotic and developmental competence. Oocytes were matured immediately after recovery (control) or were held in a mixture of 40% TCM 199 with Earle's salts, 40% TCM 199 with Hanks' salts, and 20% FBS, at room temperature for 16 to 18 h (EH-held) and then matured. Chromatin status was determined at 0, 10, 14, 18, and 22 h of maturation culture. Oocytes were fertilized in vitro after either 18 or 22–24 h maturation. The EH treatment maintained oocytes at the germinal vesicle stage (79.3%, vs. 87.7% for control oocytes at 0 h; $P > 0.05$). Upon culture, held oocytes matured more quickly than did control oocytes. The proportions of mature oocytes were not significantly different between groups at 18 h (EH-held, 80.6% and control, 79.3%); however, after 22 h significantly more EH-held than control oocytes had degenerated (24.1% vs. 4.5%, $P < 0.0001$). Blastocyst development was similar between groups for oocytes fertilized after 18 h maturation (EH-held, 29.6% and control, 27.8%). When oocytes were fertilized after 22–24 h maturation, EH-held oocytes yielded lower blastocyst development than did control oocytes (16.5% vs. 29.3%, $P < 0.05$). In conclusion, bovine oocytes may be effectively held in the EH treatment before maturation without adversely affecting meiotic or developmental competence. However, holding affects the kinetics of maturation and this must be taken into account when subsequent manipulations are performed.