

1. INTERNACIONALIZAÇÃO

1.1 RESUMOS FACULDADE ESTÁCIO DE GOIÁS – FESGO

PEPTAIBOLS FROM *TRICHODERMA ASPERELLUM* INDUCE APOPTOSIS AGAINST *AEDES AEGYPTI* (DIPTERA: CULICIDAE)

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Abstract

Aedes aegypti is a vector of arboviruses such as Dengue, Chikungunya, Zika and Yellow Fever that causes important public diseases, which justifies the search for effective measures to reduce this vector in the environment. The *Trichoderma* genus presents the mycoparasitism against the phytopathogenic microorganisms by several apparatus, including the production of peptaibols peptides. The linear and amphipathic characteristics of these molecules promote cytotoxicity by the ion-channel depolymerization into phospholipid bilayer membranes leading to apoptosis. The current study proposed a new approach to test the peptaibols (CPP) from *Trichoderma asperellum* (*T. asperellum*) on the morphological structures of *Aedes aegypti* L3 larvae. The current study first demonstrates the larvicidal activity of the CPP produced by the *T. asperellum*, purified from a media culture using a 3 KDa polymeric membrane, and analyzed by Orbitrap Mass Spectrometry. Groups of 20 L3 larvae were exposed to 10 mg.mL⁻¹ CPP, visualized by scanning electron microscopy (SEM) and transmission electron microscopy (TEM). After 60 hours of exposure, 80% of larvae were dead, autophagic vacuolization and fragmentation of nuclear DNA were observed by TEM. Peptaibols at 10µg.mL⁻¹ induced 92% of cell death in C6/36 *Aedes* cells after 48 hours and increased the number of PI/AnnexinV positive cells by phosphatidylserine exposure using the AnnexinV-FITC apoptosis detection. Our study propose a new approach for the attack of the *Aedes aegypti* L3 larvae, based on the use peptaibols. Crude extracts of *T. asperellum* presents thermostable molecules, such as chitinolytic enzymes in synergism, making *T. asperellum* an interesting model for the prospection of active biomolecules against vectors.

Keywords: *Aedes aegypti*, *Trichoderma asperellum*, Peptaibols, Larvicidal Activity, Apoptosis

EFFECT OF CELL WALL DEGRADING ENZYMES PRODUCED BY *TRICHODERMA ASPERELLUM* ON CUTICLE CATTLE TICK *RHIPICEPHALUS (BOOPHILUS) MICROPLUS*

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Abstract

BACKGROUND: The cattle tick is an ectoparasite widely distributed throughout the world responsible for reduced production of milk or meat related to blood spoliation and transmission of diseases. For this reason, there is an increasing interest in the development of new methods of control of this parasite. **OBJECTIVES:** The current study proposed a new approach for to test the efficacy of chitinolytic enzymes from *Trichoderma asperellum* on the degradation of cuticle of *Rhipicephalus (Boophilus) microplus*. **METHODS:** The fungus was incubated in TLE medium and enzyme production was induced with commercial chitin (CWDE) and tick chitin (T-CDWE). To determine the specific enzymatic activities the productions were measured for chitinase, N-acetylglucosaminidase (NAGase), β -1,3-glucanase and protease. The mass of 50 mg of tick eggs were waited until hatched (~1000 larvae) and submitted to bioassays with CWDE (10 and 20 mg.mL⁻¹) and T- CWDE (10 mg.mL⁻¹). Twenty adult females were also in the tests. All enzymes required showed enzymatic activity. The screening of CWDE and T-CWDE were performed by the sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS -PAGE). The scanning electron microscopy (SEM) was performed. **RESULTS:** The electrophoresis presented protein bands of molecular weights varying between 20 – 100 kDa, characteristic of endo and exochitinases from *T. asperellum*, according different chitin elicitors. All enzymes required showed enzymatic activity. After 72 hours of biocidal test with 20 mg.mL⁻¹ of CWDE, 100% of larvae died. The T-CDWE test with 10 mg.mL⁻¹ presented death of 100% of larvae after 48 hours. The SEM corroborated the disruption on the cell wall by chitinolytic enzymes. **CONCLUSIONS:** The study presented the efficacy of CWDE and L_CWDE against chitin structures of L3 larvae *Ae. aegypti*. This biotechnological strategy has potential for the industry due to its feasibility, biodegradable and ecofriendly bioactive natural compounds without generation of chemical residues

Keywords: *Trichoderma asperellum*, chitinolytic enzymes (CDWE), tick *Boophilus microplus*, disruption to the resistant cuticle

BIOCONTROL AGAINST *Aedes aegypti* BY BIOTECHONOGICAL APPLICATION OF CHITINOLYTIC ENZYMES FROM *TRICHODERMA ASPERELLUM*

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Abstract

The *Aedes aegypti* is a vector of arboviruses that cause important public diseases, which justifies search for effective measures of elimination. The current study proposed a new approach for the biocontrol of the *Ae. aegypti* based on the use chitinolytic enzymes produced by the fungus *Trichoderma asperellum*, aiming to attack the cuticle present in the larval phase. The fungus was incubated in TLE medium and enzyme production was induced with commercial chitin (CWDE) and larvae chitin (L-CWDE). Induction resulted in production of chitinase, N-acetylglucosaminidase, β -1,3-glucanase and protease. Groups of twenty L3 larvae were submitted to a biocidal test with CWDE or L-CWDE in different concentrations and the effect of treatment evaluated by scanning electron microscopy. After 72 hours of biocidal test with 20 mg mL⁻¹ of CWDE, 100% of larvae died. The L-CWDE test with 10 mg mL⁻¹ presented death of 100% of larvae after 48 hours. In conclusion our results suggest that L-CWDE presents a more specific activity to attack the L3 larvae. This biotechnological strategy has potential for the industry due to its feasibility, ecological benefits and biodegradable bioactive natural compounds.

Keywords: *Aedes aegypti*, *Trichoderma asperellum*, chitinolytic enzymes (CWDE), Biocontrol and Biotechnology.

MANUAL THERAPIES IN THE MANAGEMENT OF BURNOUT SYNDROME IN UNIVERSITY STUDENTS

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Abstract

Burnout syndrome (SB) is characterized by emotional exhaustion, reduction of professional achievement and depersonalization, which culminate in physical exhaustion. The objectives of the study were to identify students with signs of high level of SB, to describe the sociodemographic profile of such group, as well as to apply a protocol of physiotherapeutic treatment. This is a quantitative, descriptive study of intervention. Used instruments; Socio-demographic profile questionnaire, Work Stress Scale and the Maslach Burnout Inventory-General Survey. Therapy was used for stretching, aerobic exercise, suction cup, instrumental myofascial release and functional bandages. Among the 158 surveyed, 19.62% expressed a high SB level. As for sex, the predominance was; of absolute form higher in women 70.96% and proportionally higher in men 21.42%. As for the other variables, the predominance was single students (a) s 67.74%, average of 25 years, employment time between 1-2 years 35.48%, with workload ≥ 40 hours per week 58.07% , family income 1-2 minimum wages 55.30%. Being that 90.32% does not pretend to retire in the current job and 70.96% sedentary. A Manual Therapy protocol was applied experimentally in three students who obtained a high SB score. The protocol consisted of Stretching, Miofacial Release, and Treadmill. It was concluded that 19.62% of students have signs of elevated SB, single, subject to high weekly workload and low income. Sedentary, double-sexed students, in addition to working only to make up income. Regarding the application of the therapeutic protocol, there was a reduction in the levels of emotional exhaustion and depersonalization in clinical cases evaluated.

Keywords: Burnout syndrome, psychosomatic, sociodemographic profile, students, treatment.

ULTRASOUND IN TRACKING BONE QUALITY FROM THE PERSPECTIVE OF OSTEOPOROSIS

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Abstract

Objectives: The overall objective of the study was to define the importance of ultrasound (US) phalanx as part crawler respective bone quality Osteoporosis and specifically establish Ultrasonometry of diagnostic tests such as bone quality, according to age, set a quality Nomogram bone (UBPI) view the ultrasonometry and build bone quality normal curve according to age setting the cut off of pathological risk. **Material and Methods:** A descriptive, analytical, cross. Attended the screening 932 women, of these, 125 were selected for agreeing to participate and fit the inclusion exclusion criteria. They were oriented to addressing the Women's Maternity Hospital Dona Iris to achieve the Ultrasonometry tests phalanx and Bone Densitometry. **Results and Discussion:** When us to evaluate the phalanx in UBPI parameter in relation to the column DEXA test sensitivity was 80% in Group 1 and 100% for G2, G3 and G4. In relation to the femur DEXA test sensitivity was 90% and G1 100% G2, G3 and G4. when analyzing the 50th percentile, there was a significant inverse correlation showing that the greater the age, the greater the loss of bone quality. This result includes an early decline, still starting at the woman's fertile period. When the disease risk was calculated the results were, for the age group 30-39 years the average: 0.68 and SD = 0.23; 40-49 years, average of 0.64 and SD = 0.28; 50-59 years, mean and SD: 0.54 and 0.37 respectively and finally, age > 60 years, mean and SD: 0.32 and 0.30. These data can not be compared, since there are no similar studies and DEXA data were not used for comparison, because it does not assess bone quality. **Conclusion:** The phalanx of ultrasonometry proved to be a highly effective method as Osteoporosis tracker element, regarding the evaluation of bone quality parameter that evaluated in this study.

SOCIODEMOGRAPHIC, ECONOMIC AND OBSTETRIC CHARACTERISTICS OF WOMEN ATTENDED IN THE BASIC HEALTH CARE NETWORK

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Abstract

Gestation is a special period in the life of women with physiological, emotional, hormonal and psychological changes; in this sense, prenatal care is recognized as an important moment in promoting and preventing and establishing the link between women, the concept and the health professionals who will be responsible for your care. To identify the socio-demographic, economic and obstetric profile of the women attending prenatal care in the Basic Health Care Network. A descriptive-exploratory survey with 110 women. Data were analyzed using descriptive statistics. It was identified that 60.9% were of brown ethnicity; 77.3% had a fixed partner; 58.2% were in the age group of 21 to 30 years, being therefore young women and of productive age; 49.1% reported four to seven years of study this data increases the lack of information to the category increasing the incidence of comorbidities by disinformation; 50.9% were Catholics; 45.5% lived on rent, in an area with basic sanitation and few afforestation; 56.4% exercised household activity; 48.2% had the companion as main responsible for the family income. Regarding the obstetric profile, 74.5% were low-risk pregnant women and 56.9% performed vaginal delivery, this data is an essential factor for prenatal care to be successful in actions developed by health professionals. Among the most related morbidities are urinary tract infection (27.3%) and pregnancy-specific hypertensive syndrome (20.9%), which have a high rate of prematurity and / or abortion. It is concluded, therefore, that improving the quality of prenatal care involves the continued technical training of health teams in solving the most prevalent problems in the primary health levels, and the late search for prenatal care is often related to disenchantment and lack of confidence in the quality of the services offered by the basic health unit.

THE NECESSARY HORMONE REPLACEMENT THERAPY IN PERI MENOPAUSE PERIOD

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Abstract

The climacteric is characterized by the transition from the reproductive to the non-reproductive phase. These hormonal transformations are accompanied by emotional, psychological, sexual, and clinical aspects. The symptoms presented often interfere with their social and family life. The objective was to verify the practice of hormone replacement therapy (HRT) in students of an HEI and the main reasons that lead them to seek HRT. A semi-structured questionnaire was applied with inquiries about the reasons that led them to seek HRT and the knowledge of the complications due to the use of hormones without medical follow-up. Approved by CEP / CONEP, according to RDC 466/2012. 33.3% of the participants reported symptoms as hot flashes and irritability as more common. Following these, fatigue, muscle fatigue, skin dryness, irritability in the mucous membranes and hair loss were observed to 31.4%. There was an early menopause report that was perceived by the interviewee's infertility. An unusual event is the appearance of fibroids with the use of HRT, and one of the interviewees also reported this episode. Symptoms such as discouragement, anxiety, headache and insomnia have been reported and are described as the most common scientifically. The interruption of menstruation was the reason for 49.9% of those surveyed the cause for seeking medical care. After a medical consultation, these women started Hormone Replacement Therapy (HRT), which is composed of estrogens, progestogens and their associations in order to alleviate the symptoms and diseases developed by climacteric women, menopausal women and in other situations such as infertility. Hormonal modulation with bioidentical hormones demonstrates great therapeutic progress and is also used in an associated way. Thus, data show that HRT is effective in many cases in women's lives, although frugal use is necessary. It is concluded, therefore, that the attention of the health professionals, highlighting nurses and pharmacists is fundamental so that the women who initiate this replacement can do it in a more quiet and safe way, being able to count on the knowledge and experience that helps in the administration and follow-up of HRT treatment.