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50th Anniversary, 1965 - 2015

INN-O-001 Innovative applications for the determination and identification Neocuasina cuasina and of extract of stems present in Quassia amara (Simaroubaceae)

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Introduction: There have been identified several medical properties of the stem and bark of *Quassia amara* L., known more commonly in Costa Rica as "hombre grande". According to related literature, *Q. amara* contains seco-triterpenoids called quassinoids; the main ones: quassine, neoquassine, 14,15-dehydroquassin and 18-hydroxyquassin; indolic alkaloids have also been found. Aim: To Determine and identify cuasina and neocuasina extract stems from *Quassia amara* through an innovative method to be used in pharmaceutical formulations. Methods and Materials: An extraction method was applied to 10g of grinded stem of *Q. amara*.; the ethanolic macerate (100mL) was purified with a solid-liquid extraction through a C-18 column, and high-resolution liquid chromatography was applied. By ultraviolet-visible spectroscopy the chromatographic peaks' areas of a 1:10 dilution of the purified extract were compared with those from three dilutions of quassin and neoquassin standards. Results and Conclusions: For quassin, a mean retention time of 20,552min was obtained, as for neoquassin, the mean retention time was 21,063min. It was quantified that the original sample contains 6,614mg of quassin (0,066%) and 3,973mg of neoquassin (0,040%). The presence of quassin and neoquassin in the analyzed *Q. amara* sample was confirmed, but in smaller proportions than those from the literature indications. Both quassinoids can be further separated for biologic-chemic-pharmaceutical use.

Key words: quassiaamara, quassinoids, chromatography, spectroscopy, costa rica



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INN-O-002 Innovation for development of a naturally derived surfactant based Sapindus saponaria saponins as a substitute for sodium lauryl sulfate in pharmaceutical formulations

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Introduction: Obtaining naturally derived surfactants has become one of the main Requirements of the pharmaceutical industry because they enable more sustainable economically, and much less polluting. Aim: To compare the emulsifying properties of Sapindasaponariasaponins to replace sodium laurilsufato in pharmaceutical formulations. Materials and Methods: Sapindussaponaria samples from different areas of Costa Rica (Acosta, Athens and San Pedro de Montes de Oca) were analyzed. For the following extraction process equipment Soxhlet, separatory funnels rotavapor was used. To the obtained extracts following tests were performed foam assay, thin layer chromatography, Liebermann-Buchard assay and NMR. Results and conclusions: The results of this testing allow to conclude that the fruit of Sapindussaponaria has a greater power emulsifier sodium lauryl sulfate, besides testing Liebermann-Buchard and NMR can determine that analyzed are triterpene saponins. Test thin layer chromatography not contribute much to the identification of compounds.

Key words: innovation, pharmaceutical products, saponins, surfactants



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INN-O-004 Industrial and Technology Policy in South Korea: lessons for Latin America

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The Latin American industrialization strategy contrasts with the case of South Korea, based on the conditions of the international economy after World War II. A count and analysis of the experience of industrialization and its contribution to economic and manufacturing development of South Korea, stands as a paradigmatic case that has managed to overcome the own limitations as external, from its own vision of industrial, technological and innovation policy from the early sixties to the present, in a historical period have shared Latin America and South Korea for more than five decades, with the common reference the same changing global economy. In this analysis the experience of so-called Chaebol, own business organization of the Asian country, whose interests are interwoven with the Korean government, is incorporated. This experience reinforces the hypothesis that the Korean success lies in the importance of openly protectionist proactive role the State has played in its industrialization process in close symbiosis with the interests of big business groups with a strongly nationalistic sense. It can be concluded that the South Korean experience -without forgetting that each experience is unique and unrepeatable- could yield important lessons for those Latin American countries that neoliberalism fell into processes of deindustrialization, assuming that it was not necessary to already have industrial policies - simultaneously minimizing the importance of spending on science, technology and innovation-, as market forces, not government forces, among others solve their problems of industrialization, express Mexico case.

Key words: south korea, industrial and technology policy, chaebol, protectionist state, latin america,



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INN-O-005 The science of simulation: kinesthetic and haptic guidance training

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A few years ago, the systematic research about interactions has been a privileged theme from Sociology; actually, Medicine, Robotics and Computing works together like sciences to develop a better way to study the remote operation into complex robotic systems that bring as benefit at human rehabilitation making a repetition of continuous movements. This research was based in work done with health and young university scholar human's participation, taking as sample the Medicine, Dentistry and Nursing student's areas from the Institute of Health Sciences, and their important contact with this third interaction: humans (Health), software (Computing) and Technology (Robotics). As part of methodology, it was used a descriptive cross-sectional and prospective design, inside an observational study, in order to evaluate a Physical Human-Robot Interaction System based on the NASA TLX protocol, abroad of next variables: effort variables, described frustration, mental load, load time and stress, and its relation to the usability and utility systems physical interaction between a human and a robotic system (HRpl) for purposes of remote training and rehabilitation. Therefore, it concludes that participants presented stress one way or another in performing workload since they presented a physiological reaction in the body which come into play different defence mechanisms to cope with a situation that is perceived as threatening or increased demand; it means that 40% of the participants, were stressed when performing the activity consisted in the use of virtual reality and a robotic arm.

Key words: medicine, computing, robotics



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INN-O-007 Raising the Bar: Recognizing the intricacies of cultural and ecological knowledge (CEK) in natural resource management

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In these rather tumultuous social and economic times, Aboriginal groups and natural resource practitioners often express the real need to look more closely at the importance and complexities of cultural ecological knowledge (CEK). To understand these intricacies and apply these principles on the ground, some theoretical constructs and practical examples need to be highlighted. Such constructs and examples can help explain the divergent world views of Indigenous knowledge and Western science within natural resource management. The objective of this article is to synthesize current literature and contemporary thought on the importance and complexities of cultural ecological knowledge (CEK) in natural resource management. In addition, it examines practical examples of the differences and similarities between Indigenous knowledge and Western science. The scope of this article is the breadth of understanding of Indigenous peoples and non-Indigenous Western scientists the world over, with the intended audience being natural resource managers, scientists/academics, and traditional knowledge practitioners. The author takes the position that natural resource managers should create social legitimacy processes through collaborative learning and systems-thinking approaches. These processes can often be validated through transfer of oral and written "ways of knowing," even when there are divergent world views. Success relies on designing clear objectives and outcomes when incorporating cultural/ecological knowledge in resource management as well as implementing systematic and culturally sensitive heritage assessments and characterizing cultural pluralism. Finally, there is a need for managers to incorporate CEK and to facilitate legislative, political, and ethical processes that help create social and cultural legitimacy in natural resource management.

Key words: collaborative learning; cultural ecological knowledge; cultural values; indigenous knowledge;



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INN-P-001 Identification of user needs: Importance for knowledge generation studies for the R+D+i

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Con el objetivo de lograr un mayor impacto de los resultados derivados de la ejecución de los proyectos de I+D+i relacionados con las tecnologías emergentes, se ha hecho indispensable la observación y análisis del entorno así como la generación de un nuevo conocimiento, que permita al ser socializado dar respuesta a sus necesidades, para lo cual se han desarrollado diferentes metodologías, procedimientos y guías, en algunas de las cuales se identifica como factor crítico la identificación de las necesidades de los referidos proyectos. En esta ponencia se profundiza en este factor crítico y se propone un procedimiento basado en la teoría relacionada con este tema, así como en la experiencia práctica de más de 15 años de estudios de generación de estudios realizados en el Centro Nacional de Investigaciones Científicas (CNIC) como parte de la implantación de su Sistema Interno de Propiedad Intelectual.

Key words: identificación de necesidades, factor crítico, generación de conocimiento, metodologías,



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INN-P-002 Attitude of the postgraduate participant of the Fermín Toro University to the development of master's degree work

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La presente investigación tiene como propósito fundamental diagnosticar la actitud de los participantes de postgrado de la Universidad Fermín Toro de Cabudare Estado Lara, ante la elaboración del Trabajo de Grado de Maestría. El nivel de esta investigación se basó en un diseño de campo, con modalidad descriptiva. La población estuvo conformada por ciento noventa y tres (193) participantes de las Maestrías de Gerencia Empresarial, Educación Superior y Preescolar de la Universidad Fermín Toro, seleccionando una muestra de cincuenta y ocho (58) estudiantes. Se utilizó como técnica de recolección la encuesta en su modalidad de cuestionario escala Likert (cinco escalas). Para darle validez al mismo, se recurrió al juicio de tres (3) expertos. En relación con la confiabilidad, se aplicó el cálculo del coeficiente Alpha de Cronbach, el cual arrojó como resultado 0.82. Una vez recopilados los datos, se procedió a su decodificación, empleándose la técnica de análisis estadística descriptiva, donde fue necesario su análisis y comparación, basándose en los datos obtenidos de la aplicación del instrumento, obteniéndose promedios ponderados de cada ítem mediante la utilización de tablas estadísticas de frecuencias absoluta y relativa y se procedió a su representación mediante gráficos de barras para su mejor observación. Los resultados obtenidos del análisis de los datos condujeron a conclusiones que determinaron lo señalado en los objetivos del estudio. Finalmente, los resultados condujeron una serie de recomendaciones entre las que se sugiere a la Coordinación de Postgrado: promover la formación académica constante y progresiva en cuanto a teoría y práctica en investigación en todos los semestres del postgrado, del mismo modo, debe incluir en sus programas de cursos actividades de investigación, donde le permitan al estudiante la búsqueda de información científica con su lectura, análisis, redacción y escritura, a objeto de facilitar la estructuración de cada trabajo de grado. Igualmente, la Universidad debe garantizar que cada participante conozca el marco regulador de los trabajos de grado y la disponibilidad de los recursos físicos y materiales para el mismo.

Key words: actitud, cognoscitivo, afectivo, elaboración del trabajo de grado