Archives of Biotechnology and Biomedicine

Volume - 5, Issue - 1

Mini Review **Published Date:- 2021-09-29**

Challenge of polymers for biosimilar products packaging

Presently Packaging plays a significant role for Biosimilar product. The process of selecting materials and the type of packaging also offers an opportunity for the Packaging scientist to look for new biological delivery choices. Most injectable protein products were supplied in some sort of glass vial, prefilled syringe, and cartridge. Those product having high Ph content there is a chance of “delamination “from inner surface of glass vial. With protein-based drugs, the biggest issue is the effect of packaging derivatives on the protein’s three-dimensional and surface structure. These are any effects that relate to denaturation or aggregation of the protein due to oxidation or interactions from contaminants or impurities in the preparation. The potential for these effects needs to be carefully considered in choosing the container and the container closure system to avoid putting patients in jeopardy.

Review Article **Published Date:- 2021-07-02**

OPEN and CLOSED state of SPIKE SARS-COV-2: relationship with some integrin binding. A biological molecular approach to better understand the coagulant effect

Related the physio-pathological process of COVID-19 disease it is interesting to focus to the aspect.

Played by interaction of Sars-Cov-2 protein with integrins of human epithelial pulmonary cell.

A bio molecular approach help in to deeply verify the involved factors and the results of this Activation RGD mediated.

Of Great interest also the relationship with some vaccine strategy followed by the various pharmaceutical industry.

The results of this work will be useful to think modification in some vaccine increasing the global safety and related some rare ADR.

Research Article **Published Date:- 2021-05-07**

Mestranol moieties clicked to Zn(II)phthalocyanine for controllable photosensitized oxidation of cholesterol

Four mestranol moieties were chemically linked to Zn(II) phthalocyanine (4) by cycloaddition “Click” reaction using a tetra-azidoethoxy substituted Zn(II)-phthalocyanine (3). The alkyl-azido coupling reaction was realized between azido groups of 3 and alkyl group of mestranol. The alkylation reaction was carried out to obtain cationic Zn(II) phthalocyanine derivative (5). The new compounds were chemically characterized by the known analytical methods. The absorption and fluorescence properties were studied in comparison. The absorption maxima of phthalocyanines 3, 4 and 5 were recorded at approx. shifts of 8 - 12 nm in the far- red region (680 - 684 nm) and the fluorescence maxima (692 - 693 nm) as compared to unsubstituted ZnPc (672 nm, 680 nm) in DMSO. The studies of singlet oxygen generation of 3, 4 and 5 showed relatively high values such as 0.52 for 3; 0.51 for 4 and 0.46 for 5. The fluorescence lifetime of 3.15 ns (3), 3.25 ns (4) and 3.46 ns (5) were determined with lower than the value than for the used standard ZnPc (3.99 ns). The high photo stability was observed for compounds 3, 4 and 5. In addition, the photosensitized oxidation of cholesterol was compared for 3 and 4 with much lower values of oxidation potential than for unsubstituted ZnPc which suggests that the substitution groups influenced on the photooxidation index of the target molecule.

Research Article **Published Date:- 2021-05-05**

In vitro beneficial effects of a flax extract on papillary fibroblasts define it as an anti-aging candidate

Objective: During aging, skin undergoes structural, cellular and molecular changes, which not only alter skin mechanical properties but also biological and physiological functions. Structurally the epidermis becomes thinner, the dermal epidermal junction flattens and the extra-cellular matrix component of the dermis is disorganized and degraded. The dermis is composed of two compartments: The Reticular dermis is the deepest and thickest part while the upper layer, the papillary dermis, which is much thinner and is in close contact with epidermis, plays an important role in the structure and function of the skin. We have recently shown that the papillary dermis was preferentially affected by skin aging because the activity of fibroblasts in this region was especially altered as a function of age. The purpose of this study was to investigate the capacity of a flax extract as anti-aging component.

Method: We investigated the capacity of a flax extract to stimulate or restore the activity of papillary fibroblasts from young and old donors in cultured monolayers and in reconstructed skin. Several biological markers of extracellular matrix homeostasis and mechanical properties were investigated.

Results: The tested flax extract seemed to improve parameters known to change with age: I/ In monolayers after treatment the number of aged fibroblasts increased II/ In reconstructed skin the flax extract appears to positively regulate some biological activities; particularly in aged fibroblasts where the deposition of laminin 5, fibrillin 1, procollagen I were increased in the dermis and the secretion of specific soluble factors like MMP1, MMP3 and KGF were regulated to levels similar to those observed in young fibroblasts III/ Mechanical properties were improved particularly for elastics parameters (R5, R2 and R7).

Conclusion: The flax extract is a promising anti-aging compound. The treatment of aged papillary fibroblasts resulted in a return to a younger-like profile for some of the studied parameters.

Research Article **Published Date:- 2021-04-20**

Venomics and antivenomics data: Current and future perspective

Venom has a very complex and exclusive nature which has been introduced by recent advances in omics technologists. These methods have revealed a new insight into venom studies as venomics. Envenoming by venomous animals is a global concern due to the distribution of important medical species around the world. Treatment of envenomed victims is dependent on accurate and fast identification of animal species with different detection methods. In recent years, new methods have been introduced based on molecular and immunological techniques. Precise diagnosis of species of venomous animals is an essential factor for treatment with specific antivenoms. Venomics and antivenomics data sets help in the selection of specific antivenoms or production of novel antivenoms with greater efficacies.

Research Article **Published Date:- 2021-04-12**

Integration of GC-MS in identification of possible final metabolites from phytase production in Pichia Pastoris based on sorbitol induction optimization

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The isolation of phytase using Pichia Pastoris under methanol/sorbitol co-feeding induction technique was investigated. The biological activity of extracellular phytase after optimization with co-substrates induction in 4 liters fermentor (NBS) increased to 13250 U/ml. This led to a 509 fold increases in comparison to the other type of phytase. This effect was studied via induction with sorbitol/methanol in fermentation by Pichia Pastoris GS115 (Mut+) at 20 °C. The interference of by products; methylal, hexamine and (S)-(+)-1,2-propanediol with release of phytase in Pichia Pastoris under methanol induction were detected and cannot be repressed by methanol induction alone. The TLC was used for glycerin analysis under methanol/sorbitol induction and the results were lesser compare to that obtained during phytase production under methanol induction alone. This work showed the higher expression of heterologous proteins and by fed batch fermentation; the expression identified an advantage of producing a significant activity of phytase.

Practical applications

Plant derived products including sorbitol have been used as alternative medicines for the therapeutic treatment of various diseases, food supplements and could be used in many manufacturing processes. It serves as a culture media for bacteria, and helps to distinguish the pathogenic E. coli O157:H7 from its most other strains. Cells growing on methanol require high oxygen consumption. Sorbitol was used as an alternative cheap co-feeding for the production of proteins and is a non-repressing carbon source for AOX1 promoter with no effect on the level of r-protein at its induction phase. This report describes the isolation of phytase using Pichia Pastoris under methanol/sorbitol co-feeding induction techniques, and sorbitol showed to be a promising co-substrate, as it could enhance both cell growth and targeted protein productivity. This co-feeding and fed-batch induction technique was used for recombinant phytase production in a small and large scale production and the metabolites were analyzed.

Mini Review **Published Date:- 2021-04-12**

Targeted and non-targeted effects of radiation in mammalian cells: An overview

Radiation of different wavelengths can kill living organisms, although, the mechanism of interactions differs depending on their energies. Understanding the interaction of radiation with living cells is important to assess their harmful effects and also to identify their therapeutic potential. Temporally, this interaction can be broadly divided in three stages – physical, chemical and biological. While radiation can affect all the important macromolecules of the cells, particularly important is the damage to its genetic material, the DNA. The consequences of irradiation include-DNA damage, mutation, cross-linkages with other molecules, chromosomal aberrations and DNA repair leading to altered gene expression and/or cell death. Mutations in DNA can lead to heritable changes and is important for the induction of cancer. While some of these effects are through direct interaction of radiation with the target, radiation can interact with the surrounding environment to result in its indirect actions. The effects of radiation depend not only on the total dose but also on the dose rate, LET etc. and also on the cell types. However, action of radiation on organisms is not restricted to interactions with irradiated cells, i.e. target cells alone; it also exerts non-targeted effects on neighboring unexposed cells to produce productive responses; this is known as bystander effect. The bystander effects of ionizing radiations are well documented and contribute largely to the relapse of cancer and secondary tumors after radiotherapy. Irradiation of cells with non-ionizing Ultra-Violet light also exhibits bystander responses, but such responses are very distinct from that produced by ionizing radiations.

Research Article **Published Date:- 2021-03-12**

Sequence-independent single-primer-amplification (SISPA) as a screening technique for detecting unexpected RNA viral adventitious agents in cell cultures

The sequence-independent, single-primer amplification (SISPA) enables the random amplification of nucleic acids, allowing the detection and genome sequencing of different viral agents. This feature of SISPA method provides evidence for application of it in monitoring the presence of adventitious RNA viruses in cell cultures. We evaluated SISPA method for the detection of a challenge RNA virus representing adventitious agent in cell cultures. Besides, by optimizing the SISPA method in our laboratory, we found false-positive results on negative control lanes in electrophoresis gels. To investigate the sources of contamination, false-positive results of SISPA were cloned into Escherichia coli cells, sequenced, and phylogenetically analyzed. This data revealed that the SISPA method can be used as an adjunct method to confirm the absence of unexpected adventitious RNA viruses in cell cultures. The phylogenetic analysis of SISPA contaminant sequences showed that the false-positive results were caused by nucleic acid amplification of commercial cDNA synthesis kit reagents, probably tracing back to expression plasmids and host ribosomal sequences, used for the production of enzymes. Therefore, laboratories using random amplification methods must be constantly aware of the potentials of such contaminations, yielding false-positive results and background noise in the final NGS reads.

Research Article **Published Date:- 2021-02-26**

Antimicrobial resistance of Klebsiella pneumoniae strains isolated from urine in hospital patients and outpatients

Background: Klebsiella pneumoniae is a bacterial species that often causes infections in humans. Infections occur most frequently in hospitalised or immunocompromised patients and are treated with antimicrobials. In recent decades, K. pneumoniae has developed significant resistance to many antimicrobials.

Objective: The main goal of this study was to determine the frequency of resistance of isolated K. pneumoniae strains from urine samples of hospital patients and outpatients, and to find evidence of ESBL strains and their resistance to certain antibiotics.

Methods: During the study period, Klebsiella pneumonia was isolated from the urine samples of 430 patients. The procedure for processing of urine samples, identification, susceptibility toward antimicrobials and evidence of ESBL strains were carried out according to the recommended standards.

Results: Of the total K. pneumoniae isolates, 153 (35.6%) were isolated from hospital patients and 277 (64.4%) from outpatients. Strains isolated from hospital patients were resistant to each tested antibiotic. ESBL strains were detected in 169 (39.30%) samples, 92 (60.13%) from hospital patients and 77 (27.8%) from outpatients.

Conclusion: Strains of K. pneumoniae isolated from the urine of hospital patients and outpatients have developed significant resistance against all tested antibiotic substances. A higher occurrence of ESBL strains was observed in hospital patients than in outpatients. ESBL strains were resistant to all penicillins and almost all cephalosporins. Highly effective antimicrobials were amikacin, colistine, carbapenem and fosfomycin. The best therapeutic results were achieved when patients were treated with fosfomycin and imipenem.
