OMICS International
conferenceseries.com

J Pharma Care Health Sys 2015, 2:5
http://dx.doi.org/10.4172/2376-0419.C1.009

Pharmaceutical Summit and Expo

October 08-10, 2015 New Delhi, India

Fungal endophytes: A novel source of antibiotics

Riyaz Ahmad Rather
Post Graduate Institute of Medical Education and Research, India

Endophytes are the endosymbionts which colonizes the plant tissue and live inside the host plant without causing any apparent damage. It is believed that most of the plants harbor fungal endophytes which produce wide range of secondary metabolites. The secondary metabolites produced by these endophytes have prospective applications in pharmaceutical industry. Some of the endophyte derived bioactive compouns like antibiotics (xiamycins, munumbicins, pseudomycins, ecomycins or cephalosporins) have emerged as the most efficative drugs. Apart from these antibiotics the diverse biosimilars produced by these fungal endophytes have anti-viral compounds, anti-cancer-agents, anti-neoplastic agents, insecticidal products, anti-diabetic agents, anti-malarial agents, anti-fungal agents, cytotoxic agents, immuno-suppressive compounds as well as antioxidant activities. The world's first billion-dollar anticancer-drug, paclitaxel (taxol) is an outstanding example of a natural product from Yew tree, *Taxus wallachiana* and later same drug was reported to produce by endophytic fungus Pestalotiopsis microspore. *Tolypocladium inflatum,* endophytic fungus from herb *Asparagus racemosus,* produce classical immuno-suppressive cyclosporine, which had a positive effect on immunomodulation reactions. These endophytes apart from proving secret machinery for synthesis of pharmaceutical agents have produced novel compounds mimicking repellants and toxicants like heptelidic acid, rugulosine, formilonine and paxiline analogous that could help in biocontrol of insect and pests. Due to huge diversity of fungal endophytes, they seem to be an alternate source of bioactive natural products with possible applications in pharmaceutical industry. Hence fungal entophytes should be exploited as a source of new antibiotics against susceptible and resistant forms of micro-organisms is the most important and promising.

farhan.rizu@gmail.com

Hollow calcium carbonate nanoparticles as pH-sensitive targeted delivery carriers in cancer therapy

A W Bulathge, M M M G P G Mantilaka and **R M G Rajapakse**
University of Peradeniya, Sri Lanka

pH sensitive drug delivery systems can achieve targeted drug delivery and systemic control release. The studies in this area have been increased in recent years and more attention has been devoted to develop new methods for the preparation of new drug delivery systems especially in cancer therapy. Among the metal based anti-cancer drugs, copper complexes have shown remarkable potential in cancer therapy. Therefore, the aim of this study is to synthesize a pH-sensitive calcium carbonate-encapsulated copper bis-(8-hydroxyquinoline) anti-cancer drug delivery system starting from naturally occurring dolomite. In this novel research, first, copper bis-(8-hydroxyquinoline) is synthesized using copper (II) chloride dihydrate and 8-hydroxyquinoline as the reactants. The drug was loaded to the preformed hollow structures of Precipitated Calcium Carbonate (PCC) by physisorption method. Hollow structures of PCC were suspended in prepared solution of Copper bis-(8-hydroxyquinoline) dissolved in Dimethylformamide (DMF). It was moderately stirred for five days. PCC products were collected by centrifugation followed by washing with acetone to remove the DMF. The obtained product was characterized using XRD, XRF and FTIR studies. XRD and FTIR studies revealed that copper bis-(8-hydroxyqunoline) incorporated inside the CaCO3 hollow PCC product. The release of drug is monitored *in vitro* in the pH values of 2.0, 4.0, 6.0 and 8.0. According to results, within first four hours, the cumulative release shows 100% in pH 2 and pH 4. However, no release is observed in pH 8 for 120 hours. Therefore, it is a good indication that the encapsulated drug releases at the pH trigger point. pH differences can be found at the subcellular level, late endosomes and lysosomes have much lower pH, in the range 4.5–5.5 . Due to high rate of glycolysis, tumors exhibit pH value 5.7 while the pH value of normal tissue is 7.4. This pH gradient is very important in internalization of drugs. Therefore this has potential applications in effective cancer therapy.

anjuwijayanthi@gmail.com