J Develop Drugs Res 2017, 6:1 (Suppl)
http://dx.doi.org/10.4172/2329-6631-C1-024

International Conference and Exhibition on

Pharmaceutical Development and Technology

April 24-26, 2017 Dubai, UAE

Biophysical characterization of a novel universal stress protein of *Schistosoma mansoni* towards molecular intervention for therapeutic treatment of human schistosomiasis

Adenowo Abiola Fatimah[1], Oyinloye Babatunji Emmanuel[1,2], Masamba Priscilla[1] and Kappo Abidemi Paul[1]
[1]University of Zululand, South Africa
[2]Afe Babalola University, Nigeria

Schistosomiasis is a neglected tropical parasitic disease which is widespread in various nations of Sub-Saharan Africa. Schistosomiasis has intense negative effects on child development, outcome of pregnancy, and agricultural productivity. In 2008, 17.5 million people were treated worldwide for schistosomiasis and 11.7 million of those treated were from Sub-Saharan Africa. Universal stress proteins (USPs) act as natural biological defence mechanisms in living organisms. They are overexpressed in stress conditions and assist in overcoming stressors through various mechanisms. USPs has been predicted to play a role in host invasion by pathogens such as *Mycobacteriun, Salmonella* and *Klebsiella*; thus may be useful in the treatment of various pathogenic diseases. This family of proteins have been discovered in many organisms including *Schistosoma mansoni*: the vector responsible for the devastating parasitic disease, schistosomiasis. The aim of this study is to characterize a novel *S. mansoni* universal stress protein, which has been hypothesized as a candidate druggable target against the parasite in humans. The *USP* gene was amplified by polymerase chain reaction and subsequently sub-cloned into a pQE30 vector. Recombinant expression of the His-tagged protein was successfully done in *E. coli*, followed by purification to homogeneity via Ni-NTA affinity purification and gel filtration. Thereafter, biophysical characterization of the pure protein was done using protein assays, circular dichroism (CD) and mass spectrometry. These biophysical data are important for further studies towards therapeutic intervention for schistosomiasis in the form of point-of-care diagnostic tool for schistosomiasis, vaccines as well as drugs.

afaatimah@yahoo.com

Matrix diffusion controlled transdermal patches of an antihypertensive drug

Biplab Kumar Dey and Faruk Alam
Assam Down Town University, India

Transdermal drug delivery system is designed to transfer drugs through intact skin for systemic treatment. It offers controlled release of contained drug by a simple application to the skin's surface providing for more efficient drug utilization. In this research work, transdermal patches of propranolol hydrochloride were prepared as monolithic matrices by solvent casting technique. Both side opened glass moulds were wrapped with aluminium foil at one end onto which PVA backing and drug-polymer matrix were cast. Patches were formulated by using three polymers EC, PVP K30 and HPMC K4M in two combinations and in different proportions. Dibutyl phthalate (30 % w/w of polymer) and propranolol hydrochloride (20% w/w of polymer) in ethanol (10 ml) along with the polymers in requisite ratios were used to prepare the casting solution. All the prepared formulations indicated good physical stability when evaluated for thickness, weight variation, drug content, flatness, tensile strength, folding endurance, moisture content and water vapour transmission rate. Results of *in-vitro* permeation study revealed that the formulations prepared with least concentration of hydrophilic polymer blended with highest concentration of hydrophobic polymer (TTS6 and TDS6) have showed most extended drug release up to 48 hours through albino rat skin. It was observed that the drug release pattern was diffusion controlled when the data was fitted to various kinetic models. Result of *in-vivo* skin permeation study performed on male rabbit also confirmed that increase in hydrophobic polymer concentration blended with minimal hydrophilic polymer concentration have resulted in sustained release of the loaded drug from the transdermal patches.

drbiplabdey@rediffmail.com