

Pharmaceutical Technology Perspectives

Muhammad Taher



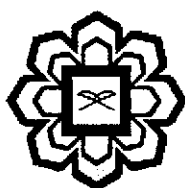
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Editor

Muhammad Taher



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Table of Content

1. Small Active Molecules with Insulin Mimetic Activity	12
<i>Muhammad Taher</i>	
2. Liver and Kidney Protective Effects of the Polyphenols, Tocopherols and Carotenoids	25
<i>Juliana bt Md. Jaffri</i>	
3. Potential Surface Active Properties of <i>Nigella sativa</i>	37
<i>Siti Nurfajariah bt Said and Kausar bt Ahmad</i>	
4. Pufa in Fish: Extraction and Fractionation Methods	51
<i>Sahena Ferdosh and Md. Zaidul Islam Sarker</i>	
5. Polypyrrole-Peg Composite Film for Drug Delivery	64
<i>Khadijah bt Edueng</i>	
6. Co-Encapsulation of Cyclophosphamide and Mesna into Double-Walled Microspheres	77
<i>Farahidah bt Mohamed and Christopher van der Wallle</i>	
7. A Recent Updates of Polysaccharide Based Nanoparticulate Oral Preparation of Insulin with Special Emphasis on <i>In Vivo</i> Application	97
<i>Uttam Kumar Mandal</i>	
8. Development of an Appropriate and Robust Dissolution Method for Solid Dosage Forms	116
<i>Uttam Kumar Mandal</i>	
9. Use of Cyclodextrin in the Production of Biomedical Nano Particles	126
<i>Omar El-Hadad</i>	
10. The Role of Pharmacogenetic Variation in Metoprolol CYP2D6 Genotypes Polymorphism	133
<i>Wan Mohd Azizi Wan Sulaiman, Tariq Abdul Razak, Lay Kek Teh and Rusli Ismail</i>	
11. Polymorphic Crystals and Their Characterisation	163
<i>Mohd Rushdi Abu Bakar, Zoltan Kalman Nagy and Christopher David Rielly</i>	

CHAPTER 2

LIVER AND KIDNEY PROTECTIVE EFFECTS OF THE POLYPHENOLS, TOCOPHEROLS AND CAROTENOIDS

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The liver and kidney form the human major excretory systems. During the process of xenobiotic elimination they are exposed to harmful metabolites or reactive intermediates that are capable of oxidizing proteins and lipids. Due to this, the liver and kidney generally face the risk of lipid peroxidation and subsequently, damage to the affected structures of the organs. On the basis of halting the oxidizing effect of the reactive species that may be generated during the process of elimination, numerous studies on the use of polyphenols, tocopherols and carotenoids have been conducted and have shown evidence on the protective effect on these organs. Various mechanisms have been proposed, including quenching of singlet oxygen of by the carotenoids and hence preventing glutathione (GSH) depletion in the liver. In the kidney, nephrotoxicity may occur with compounds that are naturally nephrotoxic and excreted unchanged through the renal route. With the polyphenols, the proposed mechanism of the renoprotection include: 1. enhancing the antioxidant defense system; 2. reducing oxidative stress and; 3. increasing level of nitic oxide (NO) in endothelial cells. These effects occur directly in the kidney.