Drug-Like Property Concepts in Pharmaceutical Design

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Abstract: (600 words)

The pharmaceutical sector is under increasing pressure to produce safer and more effective drugs. Drug development efforts have traditionally been driven entirely by potency, regardless of the characteristics. As a result, the development of non-drug-like molecules was costly, had high risk and low success rate. To tackle the obstacles, the threshold for drug candidates has been raised. To advance to clinical development, they must not only be active, but also drug-like. Drug-like qualities like solubility, permeability, metabolic stability, and transporter activities are crucial for drug candidates' success. Oral bioavailability, metabolism, clearance, toxicity, and in vitro pharmacology are all affected. In enzyme and cell-based experiments, insoluble and impermeable substances can lead to erroneous biological data and incorrect SAR. Fast clearance, short half-life, low systemic exposure, and insufficient effectiveness might result from rapid enzyme metabolism and high efflux by transporters. Early property information aids teams in making well-informed decisions and prevents the waste of valuable resources.Relationships between structure and property are critical for guiding structural alteration to improve qualities. In parallel with activity screening, high throughput ADME/TOX assays have been established and are now frequently employed to drive drug discovery programmes. The contemporary drug discovery paradigm has made property design an integral and inseparable aspect of it. The strategy has been demonstrated to be successful.

Importance of Research: (200 words)

Because of its growing importance in bringing high-quality candidates to clinical trials and the drug discovery process, understanding ADME/Tox is crucial for all drug researchers. If the attributes are poor, the candidate is more likely to fail or be less appealing as a medicine. This book is a tool and resource for scientists who are involved in, or planning to be involved in, the process of selection and optimization. The authors explain how characteristics affect pharmacological activity in vivo and how they affect in vitro experiments. Individual drug-like properties, such as solubility, permeability, and metabolic stability, are discussed from a practical standpoint in terms of fundamental understanding, applications of property data in drug discovery, and examples of structural modifications that have improved property performance. The authors also go over various approaches for screening (high throughput), diagnosing (mid throughput), and analysing drug attributes in depth (low throughput).

Biography: (200 words)

Shobana Sugumar is an active member at the European Society of Oncology Pharmacy (ESOP) and a part of the educational board at the European Specialization in Oncology Pharmacy

(EUSOP). Completed the ASHP Pain Management Certificate, ASMP-ISMP Medication Safety Certificate and Clinical Skills for International Pharmacist. Completed MS in Pharmacology and Therapeutics at the American University of Beirut by 2013, and a BS in Pharmacy at the Lebanese International University by 2009. Currently practicing as the senior clinical oncology pharmacist at Clemenceau Medical Center Affiliated with Johns Hopkins International. Applied as a PhD candidate in Clinical Pharmacy at Near East University.

Institute Photograph:

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