

Explorations of power laws in pharmacy: Implications for Adverse Drug Events (ADEs)

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The power laws are ubiquitous but we have to find them. Recently, power laws are extensively studied almost in every field -Science, Engineering, Economics Finance and Management. For the past three years, we have been working on applications of Power Laws to Pharmaceutical phenomena. We found power laws operating in pharmaceutical literature (Pharmacists' oaths of USA and India), in most of the editorials of reputed Indian English news papers (Times of India, Hindu, Deccan Chronicle, Economic Times etc.); Pharmaceutics (frequency and ranks of oil globules in emulsions, Powder Technology (Sieve analysis), Epidemiology (prevalence of H1N1 in USA and global (2010); Pharmaco-Epidemiology-ADEs with regard to certain selected drugs. Existing estimations of drug dosing are based on body weight (kg/mg). As the drug clearance rate is dependent upon metabolic rate, there is a pressing need to bring in metabolic rate into equation while titrating doses of drugs. We have compared and contrasted three methods of dosing of drugs: Dosing by body weight (kg/mg)–Linear dosage Scale, Dosing by $\frac{3}{4}$ Power Law (Kleiber's Law), and Dosing by $\frac{2}{3}$ Power Law (Rubner's Law). From the data available in public domain, ADEs were extracted for Tami flu, Avandia, Celebrex, Bextra, Paxil, and Relenza. Using least-square method, hypothetical ADEs were estimated in each case, when Kleiber's Law / Rubner's Law were inserted into the equations of dosings.

Biography

Having served nearly two decades as Drug Regulator in India (Drugs Inspector and Asst. Drugs Controller, Orissa State, India, 1968-1987, he left for USA for higher studies. Obtained M.S (Pharmacy Administration) University of Minnesota (1987-1989); M.A (Politics) and PhD in Behavioral and Administrative Pharmacy from West Virginia University, Morgantown (USA, 1990-1994). Taught at Howard University (1994-2001), Florida AM University, Tallahassee (2001-02), and Hawaii College of Pharmacy, Kapolei (2005-- Professor and Research Director). As a Professor, Principal and Dean worked at two Pharmacy Colleges in Andhra Pradesh. Currently, serving as Research Director and Academic Advisor for TP Colleges of Pharmacy, Warangal, India. Presented and published in the areas of Meta-Analysis and Outcomes Research. Recipient of WHO Fellowship (1984); The Barbara Alvis International Award—WVU Award (1994); Upjohn Award (excellence in Research, WVU) 1992; The outstanding Paper Award, AAAS-Second place (1992); Howard University Faculty Merit Award (1999); Howard University Distinguished Faculty Author (2000). He believes that ever since he embraced 'Chaos Theory and Complexity Science', his professional life really became 'chaotic'.

PS: B.Pharm (1963-67), M.Pharm—Pharmaceutical Technology (1978-80) and both the degrees from Andhra University, Waltair, India.

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