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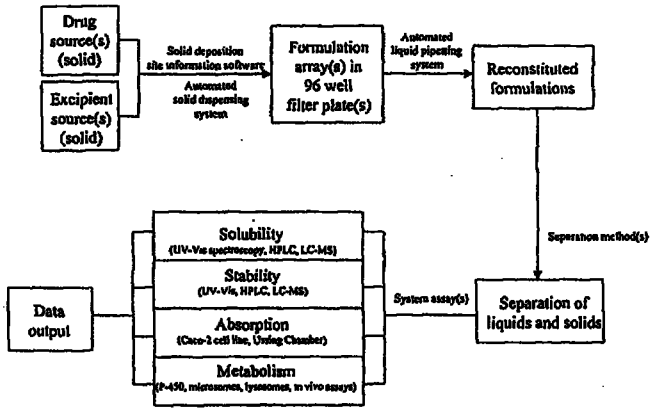
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(54) Title: FORMULATION ARRAYS AND USE THEREOF



(57) Abstract

Methods have been developed which use high throughput combinatorial formulation technologies, preferably in combination with nanotechnology and microarrays, to improve one or more properties of materials used as components of, or in the manufacture or use of, health care products, consumer products, agricultural products, nutraceutical products, veterinary products, products for use in manufacturing or processing industries, military applications, and research reagents. In a preferred application, the bioavailability and pharmacokinetics of the drugs, especially small molecule pharmaceuticals, are optimized by making many new formulations and selecting those formulations based on one or more physical or chemical properties such as solubility in an aqueous solution, without compromising selectivity or potency. Systems employing these technologies have been designed to rapidly, systematically and cheap identify optimal compositions for a desired purpose. In one preferred embodiment, new formulations are prepared and tested for bioequivalence to a formulation that is approved or commercially available. In another embodiment, the formulations are initially optimized *in vitro* for their pharmacokinetics, such as absorption through the gut (for an oral preparation), skin (for transdermal application), or mucosa (for nasal, buccal, vaginal or rectal formulation), solubility, degradation or clearance by uptake into the reticuloendothelial system ("RES"), metabolism or elimination, then tested *in vivo*.