**Improvement of Oral Bioavailability Based on Physicochemical Evaluation**

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Oral bioavailability of a drug is determined by dissolution in the gastro-intestinal tract, intestinal membrane permeation, and intestinal/hepatic metabolism. Dissolution and membrane permeation largely depend on the physicochemical properties of a drug. Physicochemical properties can be adapted by structural modification (drug design), salt formation/ solid form selection, and formulation. Physicochemical evaluation, which used to be performed at the pre-clinical development stage, has been introduced to the drug discovery stage in the last decade. Today, high throughput screening (HTS) of solubility and membrane permeability are performed in most leading pharmaceutical companies. Fundamental physicochemical parameters, such as the dissociation constant ($pK_a$) and the octanol-water partition coefficient, can be easily measured. The introduction of HTS technologies has enabled the proactive engagement of the salt formation/ crystallization process to improve oral bioavailability. Recent increases in the number of poorly soluble candidates have accelerated the introduction of solubilization technologies into drug discovery. The introduction of these technologies is accompanied by the enhancement of scientific knowledge at the molecular level. In particular, the use of computational technologies (computational chemistry, PK simulation, etc.) has increased remarkably. In this presentation, these “classic yet new” technologies will be discussed from the viewpoint of industrial drug discovery.