are addressed on the basis of curcumin's distinct chemical properties, which include H-bond donating and accepting capacity of the beta-dicarbonyl moiety and the phenylic hydroxyl groups, H-bond accepting capacity of the methoxy ethers, multivalent metal and nonmetal cation binding properties, high partition coefficient, rotamerization around multiple C–C bonds, and the ability to act as a Michael acceptor. Next, the in vitro chemical stability of curcumin is elaborated in the context of its susceptibility to photochemical and chemical modification and degradation (e.g., alkaline hydrolysis). Specific modification and degradatory pathways are provided, which mainly entail radical-based intermediates, and the in vitro catabolites are identified. The implications of curcumin's (photo)chemical instability are addressed in light of pharmaceutical curcumin preparations, the use of curcumin analogues, and implementation of nanoparticulate drug delivery systems. Furthermore, the pharmacokinetics of curcumin and its most important degradation products are detailed in light of curcumin's poor bioavailability. Particular emphasis is placed on xenobiotic phase I and II metabolism as well as excretion of curcumin in the intestines (first pass), the liver (second pass), and other organs in addition to the pharmacokinetics of curcumin metabolites and their systemic clearance. Lastly, a summary is provided of the clinical pharmacodynamics of curcumin followed by a detailed account of curcumin's direct molecular targets, whereby the phenotypical/biological changes induced in cancer cells upon completion of the curcumin-triggered signaling cascade(s) are addressed in the framework of the hallmarks of cancer. The direct molecular targets include the ErbB family of receptors, protein kinase C, enzymes involved in prostaglandin synthesis, vitamin D receptor, and DNA.

Heilig, A. et al. (2016). "Determination of aroma compound partition coefficients in aqueous, polysaccharide, and dairy matrices using the phase ratio variation method: A review and modeling approach." *J Agric Food Chem* 64(22):4450–4470.

The partition of aroma compounds between a matrix and a gas phase describes an individual compound's specific affinity toward the matrix constituents affecting orthonasal sensory perception. The static headspace phase ratio variation (PRV) method has been increasingly applied by various authors to determine the equilibrium partition coefficient K in aqueous, polysaccharide, and dairy matrices. However, reported partition coefficients are difficult to relate and compare due to different experimental conditions, e.g., aroma compound selection, matrix composition, equilibration temperature. Due to its specific advantages, the PRV method is supposed to find more frequent application in the future, this Review aims to summarize, evaluate, compare, and relate the currently available data on PRV-determined partition coefficients. This process was designed to specify the potentials and the limitations as well as the consistency of the PRV method, and to identify open fields of research in aroma compound partitioning in food-related, especially dairy matrices.

Hendrickx, J. et al. (2016). "Inhaled anaesthetics and nitrous oxide: Complexities overlooked: Things may not be what they seem." *Eur J Anaesthesiol* 33(9):611–619.

This review re-examines existing pharmacokinetic and pharmacodynamic concepts of inhaled anesthetics. After showing where uptake is hidden in the classic FA/FI curve, it is argued that target-controlled delivery of inhaled agents warrants a different interpretation of the factors affecting this curve (cardiac output, ventilation and blood/gas partition coefficient). Blood/gas partition coefficients of modern agents