contradict each other. This review highlights different techniques employed to investigate the membrane interaction of flavonoids with special emphasis on erythrocyte model membrane systems and their significance in understanding the nature and extent of flavonoid–membrane interactions. We also attempt to correlate the membrane localization and alteration in membrane fluidity with the biological activities of flavonoids such as antioxidant, anticancer and antimicrobial properties.

Swami, R. and A. Shahiwala (2013). "Impact of physiochemical properties on pharmacokinetics of protein therapeutics." *Eur J Drug Metab Pharmacokinet* 38(4):231–239.

Physicochemical properties, such as molecular weight, size, partition coefficient, acid dissociation constant and solubility have a great impact on pharmacokinetics of traditional small molecule drugs and substantially used in development of small drugs. However, predicting pharmacokinetic fate (absorption, distribution, metabolism, and elimination) of protein therapeutics from their physicochemical parameters is extremely difficult due to the macromolecular nature of therapeutic proteins and peptides. Their structural complexity and immunogenicity are other contributing factors that determine their biological fate. Therefore, to develop generalized strategies concerning development of therapeutic proteins and peptides are highly challenging. However, reviewing the literature, authors found that physiochemical properties, such as molecular weight, charge and structural modification are having great impact on pharmacokinetics of protein therapeutics and an attempt is made to provide the major findings in this manuscript. This manuscript will serve to provide some bases for developing protein therapeutics with desired pharmacokinetic profile.

Todo, H. (2017). "Transdermal permeation of drugs in various animal species." *Pharmaceutics* 9(3):33.

Excised human skin is utilized for in vitro permeation experiments to evaluate the safety and effect of topically applied drugs by measuring its skin permeation and concentration. However, ethical considerations are the major problem for using human skin to evaluate percutaneous absorption. Moreover, large variations have been found among human skin specimens as a result of differences in age, race, and anatomical donor site. Animal skins are used to predict the in vivo human penetration/permeation of topically applied chemicals. In the present review, skin characteristics, such as thickness of skin, lipid content, hair follicle density, and enzyme activity in each model are compared to human skin. In addition, intra- and interindividual variation in animal models, permeation parameter correlation between animal models and human skin, and utilization of cultured human skin models are also descried. Pig, guinea pig, and hairless rat are generally selected for this purpose. Each animal model has advantages and weaknesses for utilization in in vitro skin permeation experiments. Understanding of skin permeation characteristics such as permeability coefficient (P), diffusivity (D), and partition coefficient (K) for each skin model would be necessary to obtain better correlations for animal models to human skin permeation.

Toprak, M. (2016). "Fluorescence study on the interaction of human serum albumin with Butein in liposomes." *Spectrochim Acta A Mol Biomol Spectrosc* 154:108–113.

The interaction of Butein with human serum albumin in L-egg lecithin phosphatidylcholine (PC) liposome has been investigated by fluorescence and absorption spectroscopy. The results of the fluorescence measurement indicated that Butein effectively