

Solvent effect

- Solvent system change replace pK_a , surface tension, viscosity etc.. Therefore, the reaction rate is also affected.
- It causes the formation of different reaction pathways.

pH effect

- V type pH-velocity profiles
- Sigmoid type pH-velocity profiles
- PH-velocity profiles in the form of bell curves

- Effect of active substance solubility
- Excipient effect
- Light effect
- Energy= $h \cdot \gamma$ h : planck constant

$$\gamma = c/\lambda \quad \gamma: \text{frequency Hertz(Hz)}_S^{-1}$$

c : speed of light

λ : light wavelength

★ The wavelength of the light is small, because the frequency is high, it means greater energy absorption

- Light-induced reactions are called photolysis reactions. Rays with small wavelength and high energy are effective. The energy is inversely proportional to the wavelength.

Light type	Wavelength(nm)	Energy(kcal/mol)
UV	50-400	286-72
Visible	400-750	72-36
IR	750-10000	36-1

- In general, light absorbing drugs at wavelengths below 280 nm are sensitive to sunlight, molecules absorbing light above 400 nm are susceptible to degradation both in sunlight and in room light. The small wavelengths of UV rays are the most dangerous.

Fotostability tests

Light source option 1

- Visible and equipped with uv light
- Xenon lamp
- Metal halide lamp (D65 / ID65 must meet emission standard)
- According to ICH guidelines

Light source option 2

- Cold white light fluorescent lamps
- The spectrum is 320-400 nm and max. near UV fluorescent lamps with energy emission between 350-370 nm.