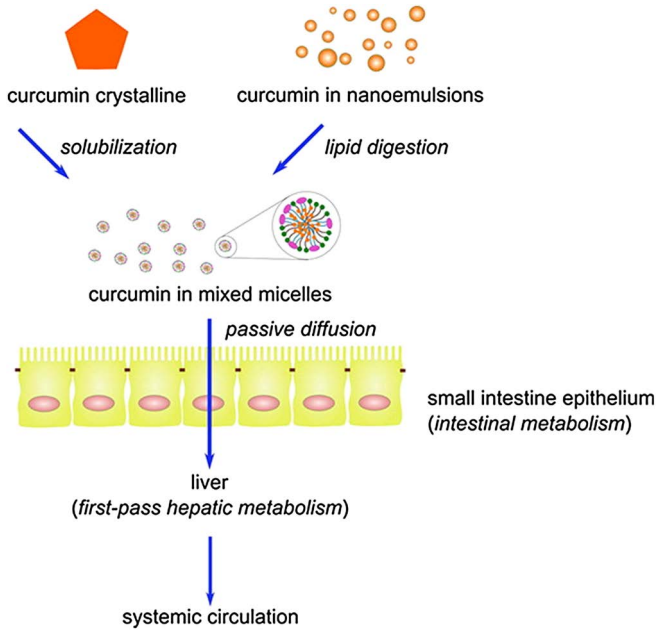

Figure 6.2 Scheme of the absorption and metabolism of unformulated (crystalline) curcumin and curcumin nanoemulsion. Reprinted with permission from ref. 82. Copyright 2012 American Chemical Society.

Tween 80, to which curcumin was added at 30 °C or 100 °C, and incubated for various intervals of time. The transfer of curcumin and bioaccessibility were higher at the higher temperature.[83] A stable nanoemulsion with two bioactive compounds, resveratrol and curcumin, was developed using soy lecithin, sugar ester and modified starch. Very fine nanoemulsions were created by high-pressure homogenization and the antioxidant activities of the encapsulated compounds were studied.[84]

In a study conducted to evaluate the influence of the size, structure and composition of droplets for use in emulsion-based delivery system, *in vitro* studies and *in vivo* experiments on a rat-feeding model were conducted.[85] Heptadecanoic acid was used as the model fatty acid and coenzyme Q10 was used as the model lipophilic nutraceutical in this emulsion-based system, which was developed for oral delivery of nutraceuticals. Coenzyme Q10 is one of the most commonly used supplements, and is an integral part of aerobic respiration. The results of the study indicate that the dimensions of the emulsion influence the bioavailability of the nutraceutical, and the rate and extent of lipid digestion. The rate of lipid digestion was increased both under *in vitro* and *in vivo* conditions when the droplet size was smaller. It was also observed that when a digestible carrier oil like corn oil was used, the rate of lipid digestion and bioavailability of coenzyme Q10 was higher than when indigestible mineral oil was used.[85] In a more recent report, the physiochemical properties and nutraceutical effects of coenzyme Q10 were studied in detail.[86] Coenzyme Q10 has the property of self-nanoemulsifying, and the