Characterisation and ADME considerations

In this guide

6. Specifically in food, the primary function of TiO2 is as an opacifier and white pigment. To achieve this function, it is critical that food grade TiO2 (E171) exists as an aggregate of smaller primary particles with a median particle size of 200 – 300 nm. Engineered nano-TiO2 has all (100%) of its particles less than 100 nm in diameter and is colourless and would therefore be unsuitable for use as a pigment in food applications.

7. The COT concluded that there is uncertainty over the toxicological effects of TiO2 nanoparticles. The Committee therefore considered that if animals and/or humans are exposed to test substances which contain higher levels of nanoparticles than normally found in food-grade TiO2, that could change the toxicological profile and potentially the risk, but it is unclear by how much or in what way.

8. The COT concluded that the physical form of TiO2 will affect its absorption and distribution. The focus of the COT was on food-grade TiO2 but the wide variance of test materials (nano, micro and mixtures of nano and micro) used in experimental studies was noted. Due to this large variability, as well as the potential impact of the matrix of administration, the Committee could not

ascribe a specific percentage for the absorption of food-grade TiO_2. However, the Committee considered that absorption of food grade TiO_2 (E171) is low.