

Basic knowledge of carotenoids

The carotenoids are lipophilic molecules which are synthesized only by plants and photosyntetic bacteria.

The carotenoids are classified according to chemical structure in carotenes, which do not have oxygen

The carotenoids are according to chemical structure in xanthophylls, which have oxygen.

Cryptoxanthin



Biological function of some carotenoids

Carotenoids play an important potential role in human health by acting as a biological antioxidants, protecting cells and tissues from damaging effects of free radicals and single oxygen.

Some carotenoids are used as pigments in egg yolk and chicken skin because they are absorbed, metabolized and deposited in fatty tissue. The lutein and zeaxanthin are believed to function as protective antioxidants in the macular region of the human retine.

Some carotenoids are not used as pigments because they are precursor of vitamin A, which has many vital systemic functions in humans.



Important carotenoids for skin chicken pigmentation

The marigold flower contains lutein fatty acid esters and zeaxanthin fatty acid esters. These pigments need to be saponified in order to make them bioavailable for the chicken.

Another sources of bioavailable carotenoids in poultry feed are maize, maize gluten, and alfalfa.

Saponification of lutein and zeaxanthin esters from marigold flower

Zeaxanthin fatty acid esters

Zeaxanthin