

Carotenoids – Life and Death – a medical plea!



Each of us is dependent upon carotenoid pigments. There are over 1,100 different types. Many are in the foods we eat. They are in obvious yellow and orange things like carrots, orange juice, butter and honey, but in high concentration they are red, as in rose hips. They also lurk behind green leaves such as lettuce, kale and broccoli. Together with green chlorophyll they provide 100% photosynthesis. These pigments absorb sunlight energy like a solar panel and they are active molecules that need something to combine with to survive. That is where they are so useful in humans.

Carotenoids are fat soluble. That means you never pee or poo them out. They stay in your body and they keep you healthy. When you eat carotenoids there is an enzyme in your gut that snips each carotenoid molecule into two Vitamin A molecules. That way Vitamin A is useful for seeing in the dark and general health and growth throughout your body. Carotenoids are free radicals which are popularised as being very useful. They are anti-oxidants that help to arrest macular degeneration.

Carotenoids are so much more useful than Vitamin A. They are in every cell of your body. They assist with all the sensory aspects of the body. They are in ear wax – hearing; they are around the brain as yellow globules – brain activity; they colour the nasal mucosa – smelling; they are implicated in taste; they are in the retina of the eye – vision; they are useful in protecting the skin from harmful effects (with melanin); they accumulate in body fat, and they are in the blood. Tap off some blood and a yellow fluid accumulates at the top of the test tube. This is a 'caroteno-protein complex'. Both carotenoids and blood proteins will die if they are not complexed (saved) by joining forces. This is how they are so useful in the body going to all cells helping to distribute proteins to reach all parts. In nature they are just as good in leaves absorbing sun's energy, as in our blood assisting with proteins in circulating nutrients.

The body can have too much of a good thing. Carotenoids and Vitamin A are highly successful in small quantities, but highly toxic in quantity. Fitness enthusiasts who only drink carrot juice will go carrot-coloured before they die. In nature and in the oceans green algae (which have carotenoids behind the green) are eaten by small fish, which are eaten by larger fish, which are eaten by seals, which are eaten by

polar bears. The fat soluble carotenoids and Vitamin A do not go away. They accumulate through the food chain, so they are the most concentrated in the apex predator. So do not eat polar bear liver, as some explorers have done and die. But this example only goes to show how widespread and important they are in life.

Carotenoids are so important they go through the ovaries in insects and protect the next generation. The picture above shows the yellow eggs of the cabbage white butterfly. The yellow of the eggs comes from the carotenoids eaten by the caterpillar before it was a butterfly. When the tiny caterpillar emerges from the yellow egg the first thing it does is eat the eggshell – because it has vital life-saving carotenoids.

So here is the thing! All our senses decrease with age. Carotenoids are implicated in all the senses of the body, hearing, taste, smell, sight, brain function, blood and circulation to all the tissues and cells in the body, yet there is no-one in the world bothered about carotenoids or the effects of carotenoids in slowing the aging process or alleviating sensory degradation. I am a firm believer in carotenoids but am saddened that it appears to be a lost opportunity to explore the complete efficacy of carotenoids in human health.

Carotenoids can be broken down in the lab and remade commercially as seen in the colours of drinks, sweets, margarine and butter etc. So there is no shortage of carotenoids - but melanin – that pigment that makes us brown or black and protects white skin, is an entirely new subject which is even more complicated....

John Feltwell 15 May 2019