

Antioxidants are essential for bird embryo growth

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(Phys.org) —As children we are told the importance of eating plenty of fruit and vegetables, but now scientists have confirmed that antioxidants found in these food groups are essential for the growth of bird embryos.

Research, published in *Biology Letters*, has confirmed that growth rates in bird embryos are linked to the amount of [antioxidants](#) present in the yolk. Dr Charles Deeming and Dr Tom Pike, from the School of Life Sciences, University of Lincoln, UK, investigated the link between the amount of antioxidants in various species of bird egg yolk and the rate of development of the embryos within the egg.

Dr Deeming said: "We are always told to eat fresh vegetables to give us a range of antioxidants, and not eating enough of these has a damaging

effect on your health. Developing embryos also need antioxidants to keep them healthy, and the faster they grow the more they need. A bird has to go to a lot of effort to put antioxidants in the eggs it lays, but there has been on going debate about how useful they actually are."

Antioxidants have the power to protect people from disease and slow the aging process, as they fight the free radicals in the body that can harm cells. If [antioxidant levels](#) are low, oxidative stress can occur, increasing susceptibility to many illnesses including heart disease and cancer. Therefore, in order to keep healthy and maintain strong immune systems, we are advised to consume foods containing an abundance of antioxidants such as vitamin C and beta-carotene on a daily basis.

Dr Deeming explained how antioxidants in [egg yolk](#) are vital in preventing damage to developing bird embryos from free radicals.

"Oxygen is very important for life, but it can also cause problems," said Dr Deeming. "During normal metabolism it is one source of [free radicals](#), which cause damage to cells. Fast-growing embryos have high metabolic rates, and so we predicted they would also need high levels of antioxidants to effectively neutralise these damaging molecules. Using data from a large number of bird species, we showed that fast growing embryos do indeed have higher antioxidant levels in their eggs compared with eggs containing slower growing embryos."

While this work highlights the importance of antioxidants for the healthy development of bird embryos, it may have implications for the [embryos](#) of other species too, including humans.

More information: Deeming, D. and Pike, T. 2013 Embryonic growth and antioxidant provision in avian eggs, *Biology Letters* 20130757.
[rsbl.royalsocietypublishing.org ... nt/9/6/20130757.full](http://rsbl.royalsocietypublishing.org...nt/9/6/20130757.full)

Provided by University of Lincoln

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