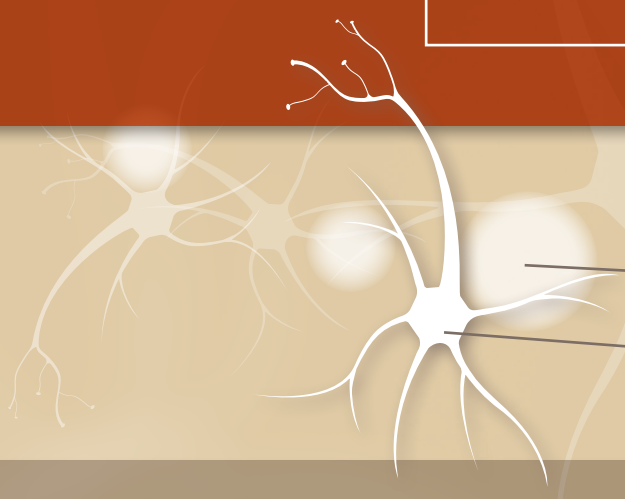
THE AGING BRAIN AND BRAIN CARE



Two abnormal structures called plaques and tangles are prime suspects in damaging and killing nerve cells.

PLAQUES: Deposits of a protein fragment called beta-amyloid that builds up in the spaces between nerve cells.

TANGLES: Twisted fibers of another protein called tau that builds up inside cells.

Adapted from Alz.org

HUMAN AND CANINE BRAINS: REMARKABLE SIMILARITIES

- Accumulation of senile plaques called beta-amyloid
- Evidence of oxidative damage
- Accumulation of neurofibrillary tangles (NFTs)

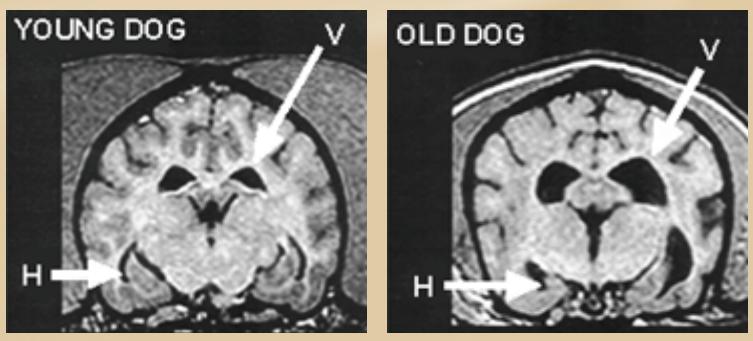
- The distribution of beta-amyloid in canines parallels that of humans
- Increased evidence of oxidative damage and reactive oxygen species
- No full-blown NFTs in canines

Canines and humans have beta-amyloid-containing lesions with identical amino acid sequences. *(Johnstone et al. 1991, Selkoe et al. 1987 as cited by Head, E. 2013). References: 3,4,5.*

45% of dog owners have a dog aged 7 and older.

References: 10

CANINE COGNITIVE DYSFUNCTION



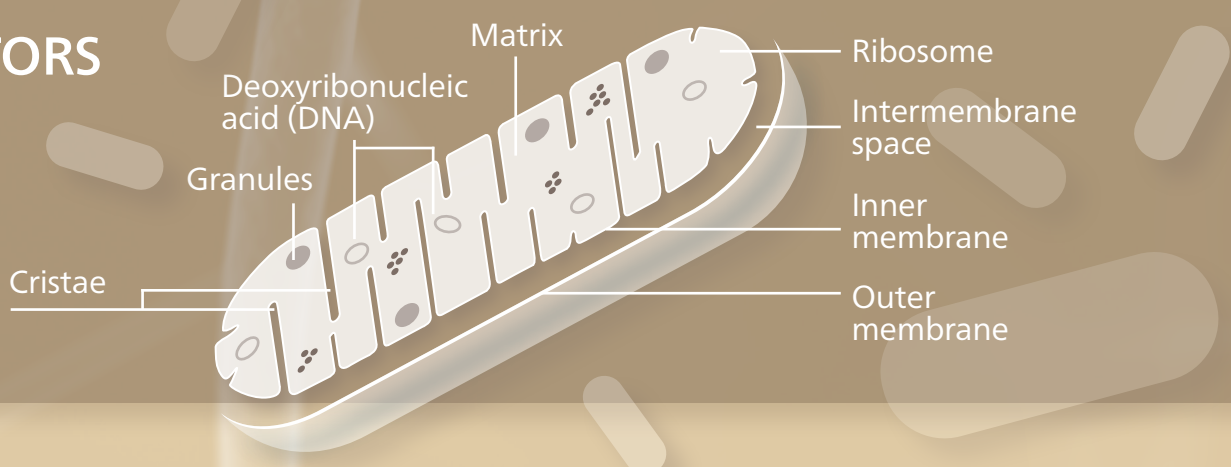
Canine cognitive dysfunction (CDD) causes many of the same symptoms as Alzheimer's disease in humans.

In MRI studies of older dogs with CDD, we see changes when compared to MRI studies of younger dogs. Note the ventricular space enlargement (V arrows) and hippocampus tissue shrinkage (H arrows) seen in the older dog (image on the right), compared to the younger dog (image on the left).

Cognitive Dysfunction Syndrome and Other Geriatric Behavior Problems; CE Advisor a supplement to Veterinary Medicine, Feb 1999.

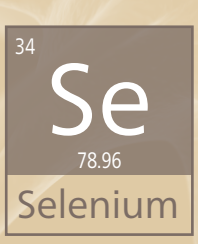
MITOCHONDRIA COFACTORS

Free radicals increase oxidative damage and decreases mitochondrial energy metabolism.

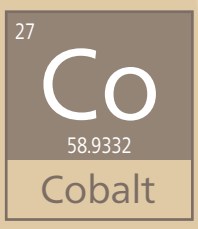


FEEDING THE BRAIN MITOCHONDRIA

Feeding the brain mitochondria for proper functioning may be a way to offset cognitive decline.



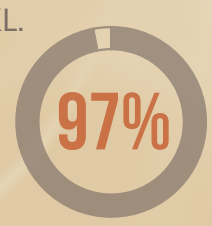
Research data suggests organic selenium can reduce beta amyloid burden, minimize DNA and RNA oxidation, and assist in preventing age-related neuropathologies associated with cognitive decline. *Reference: 1*



Cobalt is an essential micronutrient that acts as a cofactor in a number of neurologically important metalloproteins and small molecules. As part of vitamin B12, cobalt is essential to red blood cell formation and is also helpful to other cells.

Folate, B6 and B12 support DNA methylation and prevent accumulation of homocysteine, an intermediary amino acid associated with stroke and cognitive decline. *Reference: 2*

Longitudinal cross sectional studies of omega-3 and/or fish intake have shown protective associations against cognitive decline (as cited by Tucker, KL. 2016). **DHA accounts for 97% of the omega-3 fatty acids in the brain and for 93% of the omega-3 fatty acids in the eye.** References: 6, 7, 9.



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