Title: Investigating potential inhibitory roles of organic copper and zinc in CWD prion protein misfolding and propagation

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Positive cases of Chronic Wasting Disease (CWD) are spreading rapidly across the United States, Canada, and Europe. Although a treatment is currently unavailable for CWD, there is potential for molecules to bind to misfolded prion proteins preventing or slowing subsequent protein misfolding. In a rodent model, orally administered copper inhibited the misfolding and propagation of infectious proteins. However, it is yet unknown how mineral status influences disease progression in cervids. We are working to determine if copper (Cu-AA) and zinc (Zn-AA) concentrations in target organs influence the propagation of misfolded CWD prions (PrP^{cwd}). To do this we harvested 150 mature white-tailed deer (*Odocoileus virginianus*) spanning a gradient of Cu-AA and Zn-AA bioavailability in Texas, USA. Samples, including liver, brain, distal ileum, medial retropharyngeal lymph nodes, and tongue, were collected from 1) deer in South Texas with natural nutrition, 2) free-ranging deer with access to supplemental feed enhanced with Cu-AA and Zn-AA, and 3) captive deer fed exclusively feed with Cu-AA and Zn-AA supplementation. We will use prion misfolding cyclic amplification to evaluate the role of Cu-AA and Zn-AA concentrations in brain and lymphoid tissue in reducing PrP^{cwd}, while accounting for CWD status and genetic susceptibility to CWD. This research has the potential to identify molecules that may serve as novel management options for CWD treatment and prevention.