



# Protofibrils and Alzheimer's Disease

One of the Alzheimer's disease (AD) pathological features is the accumulation of clusters (plaques) of amyloid beta ( $A\beta$ ) in the brain. The formation of these plaques is the result of a continuous process by which individual  $A\beta$  proteins join together, latching onto each other, one at a time, like adding links to a chain.<sup>1</sup> In the early part of this process these small chains of  $A\beta$  are soluble and are toxic to the nerves within the brain.<sup>2,3</sup>

The most toxic of the soluble chains is called a protofibril.<sup>4</sup> Protofibrils are believed to contribute to the brain injury that occurs with AD and are considered to be the most toxic form of  $A\beta$ , having a primary role in the cognitive decline associated with this progressive, debilitating condition.<sup>5</sup>

Protofibrils cause injury to neurons in the brain, which in turn, can negatively impact cognitive function via multiple mechanisms. This not only increases the development of insoluble  $A\beta$  plaques but also increases direct damage to brain cell membranes and the connections that transmit signals between nerve cells or nerve cells and other cells. It is believed the reduction of protofibrils may prevent the progression of AD by reducing damage to neurons in the brain and cognitive dysfunction.<sup>6</sup>

## References

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