

**Saint Xavier University**

**Comparative Analysis of Antioxidant and Anti-amyloidogenic Properties of  
Various Polyphenol Rich Phytoceutical Extracts**

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## **Abstract**

Though the underlying cause of Alzheimer's Disease (AD) is not completely understood, it is widely hypothesized that the formation of toxic amyloid- $\beta$  (A $\beta$ ) protein fibrils is a major contributor to the disease's pathology and progression. Many phytochemical compounds have been shown to disrupt A $\beta$  toxicity and aggregation, including various types of polyphenolic compounds. The polyphenols responsible for these effects have also been shown to display significant antioxidant activity, which contributes to their anti-amyloidogenic effects. In this study, three plants with various documented health benefits attributed to polyphenolic compounds were investigated. These plants, traditionally used for their numerous health benefits in Asian countries, include: *Curcuma Longa* (Turmeric), *Camellia Sinensis* (Green Tea), and *Scoparia Dulcis* (Sweet Broomweed). The antioxidant activities of crude, polyphenol rich phytochemical extracts from these plants were analyzed using a 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay. The efficacy of these extracts in the prevention of A $\beta$  fibril formation is then shown in an attempt to establish a correlation between antioxidant activity and A $\beta$  aggregation. While the anti-amyloidogenic activities of *C. Longa* and *C. Sinensis* have been explored, effects of *S. Dulcis* have not yet been reported. A comparative analysis of the antioxidant and anti-amyloidogenic capabilities of the respective polyphenol rich extracts is discussed.