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Protein interactions of six tea plant extracts

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Polyphenols are a large group of natural organic compounds mainly found in plants, in whom they have diverse protective and metabolic functions. It's also known that phenolic compounds, especially tannins, interact with proteins in various significant and distinct ways. Tannins also complex proteins[1], which generally precipitates them and it's their most important industrially utilised characteristic. This study, which was a continuation of our previous work, focused on interactions of aqueous tea plant extracts with laccase from *Trametes 63ersicolour* and β-amylase from *Ipomoea batatas*. Tea plants used in this study were*Saturejamontana*, *Menthapiperita*, *Salvia officinalis*, *Matricariachamomilla*, *Camellia cinensis* and *Arctostaphylosuva-ursi*. Total phenolic content was determined using Folin-Ciocalteu reagent, which showed us that chosen plants vary considerably in their total phenolic content and the highest concentration was found to be in *Arctostaphylosuva-ursi*. Protein interactions between tea plant extracts were measured using spectrophotometric, spectrofluorimetric and electrophoretic methods. These methods showed that tea plant extracts lead to various structural changes within the protein, nature of which require further research. Finally, it was also found that all tea plant extracts, except *Matricariachamomilla*extract, reversibly precipitate β-amylase – whilst retaining most of its enzymatic activity after dissolving.Best results were obtained using *Arctostaphylosuva-ursi*extract, which precipitated the highest quantity of β-amylase, with highest activity retention. Although being an interesting phenomenon, furtherresearch is necessary to determine the nature andimportance of reversible tannic enzyme precipitation.

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