Peroxidase-Polyphenol Oxidase Association in *Dioscorea esculenta*

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A crude enzyme extract from *Dioscorea esculenta* var. *fasiculata* tissue subjected to ion exchange chromatography on DEAE-Sephadex A-50 column. This procedure resolved the extract into two main protein peaks one of which eluted through the column relatively unbound while the other protein peak which remained bound to the column was eluted with 1.0 M NaCl. Both protein peaks contained polyphenol oxidase (PPO) and peroxidase (POD) activities. The non-binding protein peak was resolved by gel filtration on Sephadex G-200 into distinct PPO and POD activities and by virtue of their apparent molecular weights of 95.5 Kd and 38.0 Kd for PPO and POD respectively were determined to be the typical enzymes. The PPO activity was completely inhibited invitro by 5 mM polyvinyl pyrrolidone (PVP). The binding protein peak was not resolved by gel filtration. It contained PPO activity which was not inhibited by PVP and a POD activity which was completely inhibited by dithiothreitol (DTT) This ionic protein peak contained 60% of total POD in the tissue, has an apparent molecular weight of 56 Kd and is suggested to be a strongly anionic peroxidase which also exhibits polyphenol oxidase activity.

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