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## Dietary Phytochemicals as Inhibitors of Primary Amine Oxidase

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# 1 Dietary phytochemicals as inhibitors of primary amine oxidase

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6 Phytochemicals such as methylxanthines, catechins and polyphenols show health benefits in a range  
7 of diseases although their mechanism of action is not fully understood. Primary Amine Oxidase  
8 (PrAO) is widely recognised as a therapeutic drug target for the treatment of inflammatory, vascular  
9 and neurodegenerative diseases. Previous work in our laboratories showed that caffeine inhibited  
10 bovine PrAO activity with a  $K_i$  of 1.0mM. In the present study we examined a range of  
11 methylxanthines and catechins as inhibitors of bovine PrAO. The methylxanthines tested were  
12 caffeine, paraxanthine, theophylline, theobromine and 7-methylxanthine. Of these, only  
13 theobromine was an inhibitor with an  $IC_{50}$  of *ca.* 300 $\mu$ M. Calculations indicated that theobromine  
14 in foods could inhibit PrAO activity by 20%. The effect of dietary catechins; epicatechin, epicatechin  
15 gallate and epigallocatechingallate was even more significant with  $IC_{50}$  values in the micromolar  
16 region. However, inhibition by catechins was complicated by apparent activation of PrAO at high  
17 concentrations although this was not significant at physiologically attainable levels. Nonetheless,  
18 these findings indicate that a range of dietary phytochemicals could affect PrAO activity *in vivo*. We  
19 suggest that the health benefits associated with consumption of certain phytochemicals may be  
20 attributed to PrAO inhibition.

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