Inhibition of monoamine oxidase by St. John's Wort:  
A spectrophotometric assay

Saira Bahl, Nicole Brazier, Jo-Anne Clarke & Vanessa Johari  
Honours Biology & Pharmacology Programme, McMaster University, Hamilton

1. Three commercial preparations of St. John's Wort were studied to determine their ability to inhibit the enzyme, monoamine oxidase (MAO) from canine liver mitochondria.
2. Enzyme activity was measured spectrophotometrically by observing the change in absorbance as MAO oxidized the substrate kynuramine.
3. The IC$_{50}$ value for tranylcypromine, a standard MAO inhibitor, was 6 pM.
4. One pill of each of the three commercial brands of St. John's Wort (two in capsule form and one in tablet form) was dissolved separately in a 8:2 ether:acetone solvent and preincubated with the enzyme. Upon addition of kynuramine, change in absorbance was measured for a period of 20 minutes. These rates were compared to rates observed from a control reaction (without inhibitor).
5. Significant inhibition of MAO was observed with all three brands of St. John's Wort ($p <0.001$). However, no significant difference in inhibition of MAO between the three brands was demonstrated.