

Response of *Vibrio fischeri* Whole Cell Biosensors to Olive Oil Phenolics

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This paper describes the response of *Vibrio fischeri* whole cell biosensors to various olive oil phenolics: tyrosol, ferulic acid, protocatechuic acid, p-coumaric acid and caffeic acid. Experimental system is based on an automated lab-made fluidic system depicted in **Fig. 1**. 100 μ L of a *Vibrio fischeri* suspension are injected in a carrier solution of the phenolics. Biosensor cells are mixed with the toxic carrier solution in the mixing coil on the way to the detector. Response registered is %inhibition of biosensor bioluminescence due to phenolics' toxicity in comparison to that resulting by injecting the *Vibrio fischeri* suspension in non toxic water carrier. Carrier solutions of phenolics were prepared in 20% methanol – 80% artificial sea water, to circumvent phenolics' low water solubility. Dose response curves are presented while kinetics of phenolics' toxicity was assessed for 5 min in the stopped flow mode when cells reached the detector. Possible synergistic and antagonistic affects were evaluated using mixed tyrosol, gallic and ferulic acid solutions at high and low concentrations. Experiments indicate that the whole cell biosensor, as applied in the automated fluidic system, responds to phenolics extracted from olive oil using 20% methanol – 80% water.

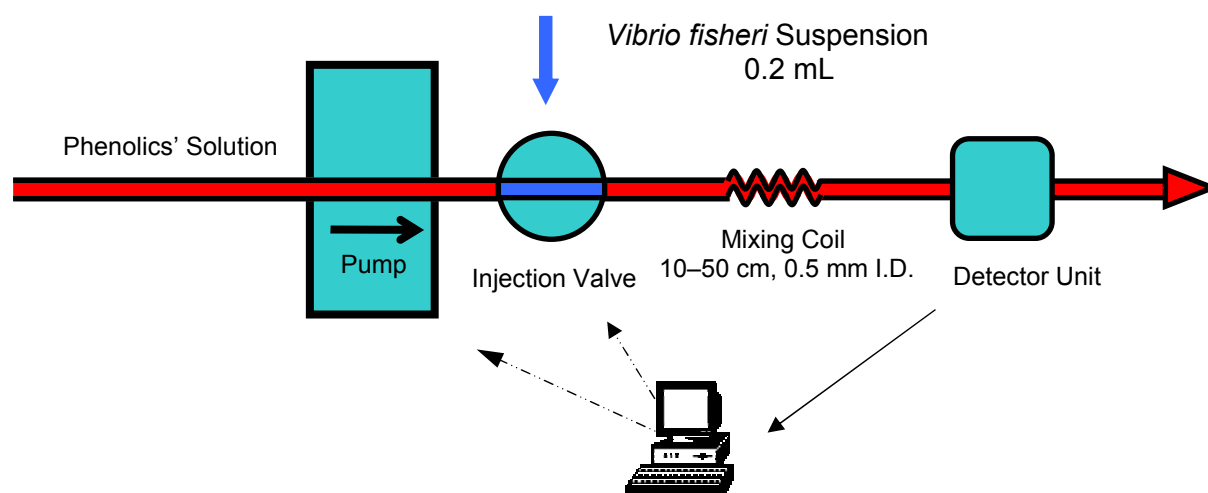


Figure 1. Laboratory made Flow Injection system for whole cell biosensors implementation.

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