Purifying a Mutated Carbon Monoxide Binding Protein, CooA C75S

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Proteins in certain organisms have the ability to bind the molecule carbon monoxide. One of these proteins is the CooA protein, which exists in similar forms in two organisms: *C. hydrogenoformans* and *R. rubrum*. The *R. rubrum* CooA protein is very selective for carbon monoxide only, possibly due to the presence of a cysteine amino acid at position 75 in the structure of the protein. The CooA from *C. hydrogenoformans* does not have a cysteine amino acid in this position and binds more promiscuously, binding nitric oxide as well as carbon monoxide, for example. In order to test the hypothesis that the cysteine amino acid at position 75 causes the high selectivity of the *R. rubrum* CooA towards carbon monoxide, we expressed and purified a mutated CooA protein from *R. rubrum* in which the cysteine at position 75 was mutated to a serine amino acid. If the purification is successful, the mutant *R. rubrum* CooA can then be tested to see if it now binds nitric oxide as well as carbon monoxide, like the *C. hydrogenoformans* CooA protein.

Information about the Authors:
The authors of this poster are all students in the biochemistry lab course in the Department of Chemistry. This lab presents the students with a unique opportunity to work on a research project during the course of the semester. All students are either juniors or seniors and chemistry or biochemistry majors.

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