# Au and Ag Nanoparticles from Invasive/Ornamental Plant Extract for Cancer Diagnosis

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(1) Background: Seeing that Pueraria montana is an invasive species in the Southeastern United States, there has been interest in repurposing the species. Noting that many plants have medicinal uses, we explored the potential of Pueraria montana as a non-toxic alternative as a gold and silver nanoparticle (used in cancer diagnosis) capping agent to create a pill to replace the gadolinium contrast agent currently used before patients undergo MRIs; (2) Objectives: The current method of nanoparticle production involves the use of harmful chemicals such as trisodium citrate. We are working to replace the chemicals in an environmentally-friendly and effective way so that medication taken prior to diagnosis can be non-toxic and side effects can be minimalized; (3) Methods: The sugars in Pueraria montana act as a capping agent for nanoparticles. For this to happen, extract is created at a 5g:500mL ratio. Then it is added to a boiling solution of either water and silver nitrate or water and hydrogen tetrachloroaurate (III), depending on the type of nanoparticle being synthesized. Following the capping of the nanoparticles by the extract, the solution is then placed in a cuvette and placed in a spectrophotometer which identifies the nanoparticles created; (4) Results and Conclusions: Both gold and silver nanoparticles were characterized using a Transmission electron microscope and a Scanning electron microscope, revealing that Pueraria montana is an effective capping and stabilizing agent.

**Awards Won:**