

AVF Annual Report

I. Project Title:

Influences of variety, growing region, winery, and aging on the anthocyanin pigment composition of red wines.

II. Principal Investigators:

James A. Kennedy Department of Food Science Oregon State University Corvallis, OR 97331-6602	Phone: (541) 737-9150 E-mail: james.kennedy@oregonstate.edu
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Brian Smith Department of Mathematics Oregon State University Corvallis, OR 97331-6602	Phone: (541) 737-5154 E-mail: bsmith@math.orst.edu
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Ronald E. Wrolstad (Same as above for JAK)	Phone: (541) 737-3591 E-mail: ron.wrolstad@oregonstate.edu
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III. Summary:

The goal of this research project is to understand the relationship between anthocyanin pigment profiles and the varietal origin of red wine. Based upon recent research in this area there is some evidence that the varietal origin of red wine could be determined by analyzing its anthocyanin pigments. This project is being conducted under very rigorous conditions to determine if varietal determination can be determined in this manner. The results of this research have significant economic implications with regard to access to the European market.

In the current year, an HPLC method has been developed and validated by determining anthocyanin retention behavior, UV-visible spectra, and mass spectra. In addition, a cursory examination of red wines indicates that further study is warranted.

IV. Overall objectives and Experiments Conducted to meet Objectives:

The overall objectives of this proposal are as follows:

1. Determine whether the varietal origin of red wines can be determined from analysis of their anthocyanin pigments.
2. Determine the influences of growing region, winery, and aging on the anthocyanin pigment composition of red wines.

To date, an HPLC method has been developed and the anthocyanin pigments have been well characterized (Figure 1).

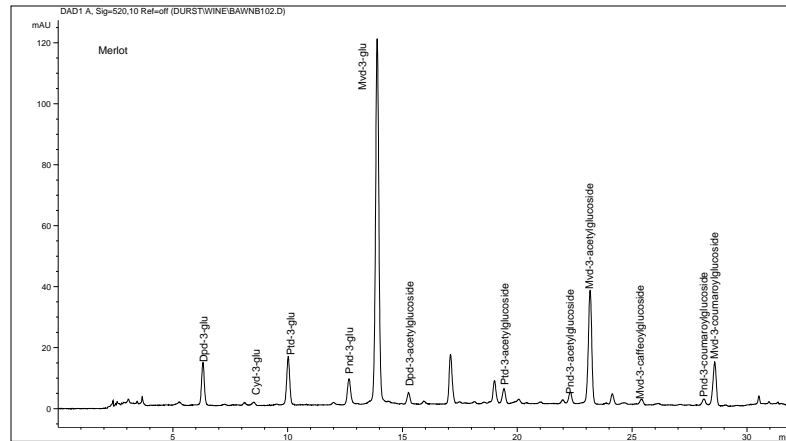


Figure 1. Sample HPLC chromatogram (520 nm detection) of a red wine (cv. Merlot) with anthocyanins indicated.

Using this method, a limited number of varietally pure red wines have been analyzed. The results of this study indicate that additional studies need to be conducted.

During the 2003 vintage, a much larger group of wines were selected and gathered. These wines will be analyzed in the coming year with the results analyzed to determine the utility of this analytical method.

V. Summary of Major Research Accomplishments and Results (by Objective):

1. Determine whether the varietal origin of red wines can be determined from analysis of their anthocyanin pigments.
 - An HPLC method has been developed and a limited number of wines have been analyzed. Based upon this early data, it is possible to identify varietally pure wines.
2. Determine the influences of growing region, winery, and aging on the anthocyanin pigment composition of red wines.
 - A large set of samples intended to address the variables growing region, winery, and aging, have been collected and will be analyzed.

These samples will undergo rigorous statistical analysis to determine the robustness of the approach for varietal designation.

VI. Outside Presentations of Research

Nothing to date

VII. Research Success Statements

To date an analytical method has been developed to quantify anthocyanins with a high degree of resolution. All tools and personnel are now in place to provide solid answers to whether or not varietal purity can be determined from anthocyanin profiles. This research will help the United States export market to be responsive to European methods for wine authentication

VIII. Funds Status

Applying for a second year of funding