

Preliminary Results on Contents of Resveratrol in Wine of Organic and Conventional Vineyards

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Keywords: *phytoalexine, stilbene*.

Introduction

Phytoalexins are compounds synthesised by plants in response to various stresses. In grapevines, these compounds belong to the stilbene family. Several studies have shown that resveratrol is usually triggered by infection of berries by *Botrytis cinerea*. In organic viticulture, grapevines are usually more stressed by attempted or successful infections of various pathogens than in conventionally grown grapevines. Furthermore, crop protection agents such as acidified clays or copper may trigger defence reactions of the plants. The aim of this study was to verify if differences between organically and conventionally produced wines exist. The preliminary results will be used as a starting point for further research of quality aspects of organic grape-vine production.

Materials & Methods

Sample wines (vintage 1997) were taken from six sites in western Switzerland (Sierre, Geneve, Aubonne, Morges, Bremblens, Neuchatel, and Ligerz). In each site, one sample was taken from wines grown organically and one from a conventionally maintained vineyard. In all but one sample, neighbouring vineyards were chosen in order to compensate for differences in soil properties.

Wine samples were analysed for contents of resveratrol by means of high performance liquid chromatography at the university of Dijon as described by (Adrian *et al.*, 2000).

Results and Discussion

Contents of resveratrol varied between 0 and 32,8 ppm depending on variety, site, and production type. There was a clear distinction between white and red wines: In samples from Neuchatel, for instance, white wines had resveratrol contents of 0,3 (organic) and 0,2 ppm (conventional), whereas samples from Pinot noir contained 12,7 ppm (organic) and 13,7 ppm (conventional), respectively. Organic wines showed higher resveratrol contents rather constantly: in 7 cases, resveratrol content in organic wine was higher whereas in 2 cases resveratrol contents were inferior.

These preliminary results indicate that there may be substantial differences between organic and conventional wine. However, further research is needed to verify if differences of resveratrol contents occur on a regular base. If such differences exist, further research is needed to identify other primary or secondary metabolites as well as an assessment of the impact of such substances on wine quality and human health.

Table 1. Contents of resveratrol in wine samples. Wine samples (vintage 1997) were from neighbouring vineyards in all cases except Neuchatel.

| Site | production type | variety | resveratrol (ppm) | Site | production type | variety | resveratrol (ppm) |
|-----------|-----------------|------------|-------------------|-----------|-----------------|------------|-------------------|
| Neuchatel | organic | Pinot Noir | 12,7 | Neuchatel | organic | Chardonnay | 0,3 |
| Neuchatel | conventional | Pinot Noir | 13,9 | Neuchatel | conventional | Chardonnay | 0,2 |
| Morges | organic | Gamay | 32,8 | Aubonne | organic | Chasselas | 0,13 |
| Morges | conventional | Gamay | 23,6 | Aubonne | conventional | Chasselas | 0,1 |
| Morges | organic | Pinot Noir | 17,6 | Neuchatel | organic | Pinot gris | 0,8 |
| Morges | conventional | Pinot Noir | 13,5 | Neuchatel | conventional | Pinot gris | 0,9 |
| Peissy | organic | Pinot Noir | 11 | Sierre | organic | Chasselas | 5,3 |
| Peissy | conventional | Pinot Noir | 8 | Sierre | conventional | Chasselas | 0 |
| Ligerz | organic | Pinot Noir | 14,9 | | | | |
| Ligerz | conventional | Pinot Noir | 8 | | | | |

References

- Adrian, M., Jeandet, P., Breuil, A. C., Levite, D., Debord, S., and Bessis, R. (2000). Assay of resveratrol and derivative stilbenes in wines by direct injection high performance liquid chromatography. *Am. J. Enol. Vitic.* **51**, 37-41.