Influence of triazole pesticides on wine flavor and quality based on multidimensional analysis technology

Ouli Xiao 1,2,† , Minmin Li 3,† , Jieyin Chen 2 , Ruixing Li 3 , Rui Quan 3 , Zezhou Zhang 1,2 , Zhiqiang Kong 2,3,* and Xiaofeng Dai 1,2*

- ¹ Feed Research Institute, Chinese Academy of Agricultural Sciences, Beijing 100081, China; xiaoouli123@163.com (O.X.); zhangzezhou7689@163.com (Z.Z.)
- ² State Key Laboratory for Biology of Plant Diseases and Insect Pests, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing 100193, China; chenjieyin@caas.cn (J.C.)
- ³ Key Laboratory of Agro-Products Quality and Safety Control in Storage and Transport Process, Ministry of Agriculture and Rural Affairs/Institute of Food Science and Technology, Chinese Academy of Agricultural Sciences, Beijing 100193, China; liminmin@caas.cn (M.L.); liruixing06@163.com (R.L.); qr802319@163.com (R.Q.)
- * Correspondence: kongzhiqiang@caas.cn (Z.K.); daixiaofeng_caas@126.com (X.D.); Tel.: +86-10-62813566 (Z.K.); +86-10-62813566 (X.D.)
- † These authors contributed equally to this work.

Fig. 1. Structure of triadimefon (a), tebuconazole (b), paclobutrazol (c).

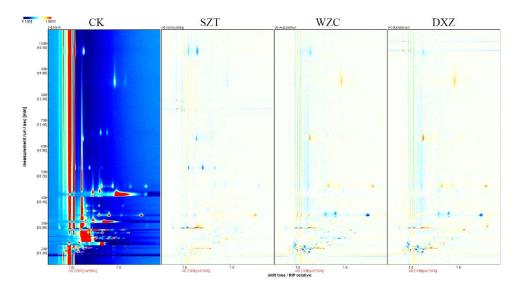


Fig. 2. GC-IMS spectra of volatile organic compounds in four groups of wine

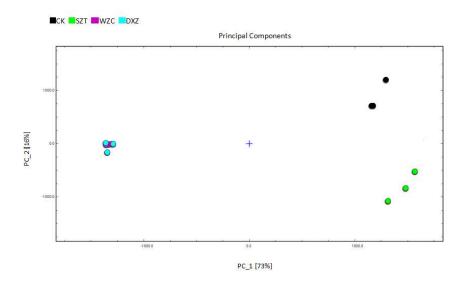


Fig.3. PCA (Principal Component Analysis) diagram of all samples.

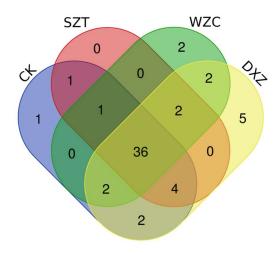


Fig.4. Veen diagram of the common volatile components in the four wine samples.

Table 1. Electronic nose principal component analysis table.

			,		
	CK	SZT	WZC	DXZ	
CK	-	0.563	0.885	0.637	
SZT	0.563	-	0.530	0.613	
WZC	0.885	0.530	-	0.592	
DXZ	0.637	0.613	0.592	-	

The data in the table is the discrimination power value between the two samples, which higher than 0.5 indicating that there was a significant difference in flavor between the samples. "-" it is the same group of samples, not comparative

Table 2. Taste differences of wines

Product names	Reference	Samples Distances	P Value
CK	DXZ	194.18	0.00
CK	SZT	53.30	0.00
CK	WZC	54.92	0.00
DXZ	SZT	230.05	0.00
DXZ	WZC	166.65	0.00
SZT	WZC	72.74	0.00

 \boldsymbol{P} value of 0 means significant difference between the two groups