

## 5. BIBLIOGRAFIA

ALVAREZ-RODRIGUEZ, M.L.; LOPEZ-OCAÑA, L.; LOPEZ-CORONADO, J.M.; RODRIGUEZ, E.; MARTINEZ, M.J.; LARRIBA, G.; COQUE J.-J. R. (2002). Cork taint of wines: role of the filamentous fungi isolated from cork in the formation of 2,4,6-trichloroanisole by O methylation of 2,4,6-trichlorophenol. *Applied and Environmental Microbiology*. 68: 5860-5869.

AMON, J. M.; SIMPSON, R. F. (1986). Wine corks: A review of the incidence of cork-related problems and the means for their avoidance. *Australian Grapegrower and Winemaker*. 268: 63-72.

AMON, J. M.; VANDEPEER, J. M.; SIMPSON, R. F. (1989). Compounds responsible for the cork taint in wine. *Australian and New Zealand Wine Industry Journal*. 4: 62-69.

BARKER, D. A.; CAPONE, D. L.; POLLNITZ, A. P.; MCLEAN, H. J.; FRANCIS, I. L.; OAKLEY, H.; SEFTON, M. A. (2001). Absorption of 2,4,6-trichloroanisole by wine corks via the vapour phase in an enclosed environment. *Australian Journal of Grape and Wine Research*. 7: 40-46.

BORGES, M. (1985). New trends in cork treatment and technology. *Beverage Rev.* 5, 15, 16, 19, 21.

BUREAU, G.; CHARPENTIER, M.; PANSU, M. (1974). Etude des goûts anormaux apportés par le bouchon sur le vin de Champagne. *Rev. Fr. oenol.* 13(56) : 22-24.

BUSER, H.R.; ZANIER, C.; TANNER, H. (1982). Identification of 2,4,6-trichloroanisole as potent compound causing cork taint in wine. *J. Agric. Food Chem.* 30: 359-362.

CALDENTEY, P. (1994). Studio di alcuni componenti chimici del sughero per uso enologico, con particolare riferimento ai composti volatili. Tesi Dottorato di Ricerca in “Biotecnologia degli Alimenti” - VII ciclo (1991-1994).

CALDENTEY, P.; FUMI, M.D.; MAZZOLENI, V.; CARERI M. (1998). Volatile compounds produced by microorganisms isolated from cork. *Flavour and Fragrance Journal.* 13: 185-188.

CAMPILLO, N.; AGUINAGA, N.; VINAS, P.; LOPEZ-GARCIA, I.; HERNANDEZ-CORDOBA, M. (2004). Purge and trap preconcentration system coupled to capillary GC with AED detection for 2,4,6-trichloroanisole determination in cork stoppers and wines. *Journal of Chromatography A.* 1061: 85-91.

CANTAGREL, R.; VIDAL, J.P. (1990). Recherche des composes responsables du goût de bouchon dans le Cognac. *Bull. OIV* 63 (709-710): 253-277.

CASTERA-ROSSIGNOL, A. (1983). Contrôle microbiologique des bouchons. Bouchons stériles conditions de conservation des bouchons. *Vigne Vin.* 17(3) : 183-193.

CATICE (2003). Centro de Asistencia Técnica e Inspección del Comercio Exterior, Ministerio de Economía y Hacienda.

CEE (1991). Journal Officiel des Communautés Européennes. Directive du conseil du 21 mars 1991. 91/173/CEE.JO N° L 85/34 du 5/04/1991.

CHARPENTIER, M. (1977). Apparition des goût de bouchon en relation avec le développement des levures dans le liège. Rev. Fr. Oenol. 16(66): 60-62.

CHATONNET, P.; GUIMBERTEAU, G. ; DUBOURDIEU, D. ; BOIDRON, J.N. (1994). Nature et origine des odeurs de moisi dans les caves. Incidences sur la contamination des vins. J. Intern. Sci. Vigne et du Vin. 28 : 131-151.

CHATONNET, P.; BONNET, S.; BOUTOU, S.; LABADIE, M.D. (2004). Identification and responsibility of 2,4,6-tribromoanisole in musty, corked odors in wine. J. Agric. Food Chem. 52: 1255-1262.

CLARKE, R.J.; BAKKER, J. (2004). Factors influencing sensory perception. In Wine Flavour Chemistry. Blackwell Publishing: Oxford, UK; pp. 202-204.

CODINA, J.; ESTEBAN, C.; CALVO, A.; AGUT, M. (1993). Influence of microrganisms in cases of cork taint. In Proceedings 5th International Symposium on Cork in Oenology; Chiriotti Editori: Pinerolo, Italy; pp. 114-116.

COLAGRANDE, O. (1996). Il tappo di sughero. Chiriotti Editori.

CONFEDERAZIONE EUROPEA DEL SUGHERO. (2006). Codice Internazionale delle Pratiche per la Produzione dei Tappi di Sughero Confederazione Europea del Sughero (C.E.Liège, 5<sup>a</sup> edizione, 2006).

CURTIS, R.F.; LAND, D.G.; GRIFFITHS, N.M.; GEE, M.; ROBINSON, D.; PEEL, J.L.; DENNIS, C.; GEE, J.M. (1972). 2,3,4,6-TeCA association with musty taint in chickens and microbiological formation. Nature (Lond.). 235: 223-224.

DAVIS, R.; FLEET, G.H.; LEE, T.H. (1981). The microflora of wine cork. Australian Grapegrower Winemaker. 208: 42-44.

DAVIS, R.; FLEET, G.H.; LEE, T.H. (1982). Inactivation of wine cork microflora by a commercial sulfur dioxide treatment. Am. J. Enol. Vitic. 3: 124-127.

DISCIPLINARE SULLA PRODUZIONE ED UTILIZZO DEL TAPPO DI SUGHERO IN ENOLOGIA. (1996). Stazione Sperimentale del Sughero (Tempio Pausania), Istituto di Enologia - Università Cattolica del Sacro Cuore (Piacenza). Ed. Stazione Sperimentale del Sughero. Tempio Pausania.

DUNCAN, B.C.; GIBSON, R.L.; OBRADOVIC, D. (1997). 2,4,6-trichloroanisole and cork production. Australian and New Zealand Wine Industry Journal. 12: 180-184.

DUBOIS, P. ; RIGAUD, J. (1981). A' propos de goût de bouchon. Vignes et vins. 301: 48-49.

ENVIRONMENTAL PROTECTION AGENCY, office of water:  
<http://www.epa.gov/ogwdw000/dwh/t-soc/pentachl.htm>.

EU OFFICIAL METHODS FOR WINE ANALYSIS. (1990). Commission Regulation N° 2676/1990.

EVANS, T.J.; BUTZKE, C.E.; EBELER, S.E. (1997). Analysis of 2,4,6-trichloroanisole in wines using solid-phase microextraction coupled to gas chromatography-mass spectrometry. Journal of Chromatography A. 786: 293-298.

FORSS, D.A. (1972). Odour and flavour compounds from lipids. In: R.T. Holman, ed. *The Chemistry of fats and other lipids*. Oxford: Pergamon Press. 13: 177-215.

FUMI, M.D.; COLOMBI, M.G., BIANCHI F. (1985). Microflora presente nei tappi di sughero non sterilizzati: esame al microscopio elettronico. *Industrie delle bevande*. 14: 450-455.

FUMI, M.D.; COLAGRANDE, O. (1988). Inactivation thermique de la microflora dans les bouchons de liège. *Rev. Oenologues*. 50: 28-30.

FUNDACIÓN PARA LA CULTURA DEL VINO. (2003). Informe tecnico. Anisoles y Brettanomyces. Causas, efectos y mecanismos de control. Ministerio de Agricultura, Pesca y Alimentacion: <http://www.culturadelvino.org>.

GARCIA, D.R. (1979). *Sem. Vitivinic.* 34: 945, 947, 949.

GRIFFITH, N. M. (1974). Sensory properties of the chloroanisoles. *Chemical Senses Flavor*. 1: 187-195.

GROSSMAN, M. (1993). Positive and negative effects of microorganisms on the cork production. In Proceedings 10th International Oenological Symposium on International Association for Winery technology and Management, 3-5 May 1993, Montreux, Suisse.

HEINZEL, M.; HAGEN, M.; BOUSSER, C. (1983). Desinfection des bouchons par l'eau oxygenee activee. *Rev. Fr. Oenol.* 23: 77-81.

- HOFFMANN, A.; SPONHOLZ, W.R.; GROSSMANN, M.K.; MUNO, H. (1997). The distribution of chlorophenols and chloroanisoles in cork and a microbiological method to prevent their formation. *Industrie delle bevande – XXVI-* dicembre.
- INSA, S.; BESALÚ, E.; IGLESIAS, C.; SALVADÓ, V.; ANTICÓ, E. (2006). Ethanol/water extraction combined with Solid-Phase Extraction and Solid-Phase Microextraction concentration for the determination of chlorophenols in cork stoppers. *J. Agric. Food Chem.* 54: 627-632.
- IRIS. (1998). Integrated Risk Information System. U.S.Environmental Protection Agency Washington, DC.
- ISHIKAWA, T.; NOBLE, A.C. (1995). Temporal perception of astringency and sweetness in red wine. *Food Quality Preference.* 6: 27-33.
- ISO 4120. (2004). Sensory analysis – Methodology – Triangle test.
- ISO 6658. (2005). Sensory analysis – Methodology – General Guidance.
- ISO 8586-1. (1993). Sensory analysis – General guidance for the selection, training and monitoring of assessors. Selected assessors.
- ISO 8589. (1994). Sensory analysis – General guidance for the design of test rooms.
- ISO 22308. (2005). Cork stoppers - Sensory analysis.
- JÖNSSON, S.; UUSITALO, T.; VAN BAEL, B.; GUSTAFSSON, I.B.; LINDSTRÖM, G. (2006). Determination of 2,4,6-trichloroanisole and 2,4,6-tribromoanisole on  $\text{ng L}^{-1}$  to  $\text{pg L}^{-1}$  levels in wine by solid-phase microextraction and

gas chromatography-high-resolution mas spectrometry. *Journal of Chromatography A.* 1111: 71-75.

JUANOLA, R.; SUBIRÀ, D.; SALVADÓ, V.; GARCIA REGUEIRO, J.A.; ANTICÓ, E. (2002). Evaluation of an extraction method in the determination of the 2,4,6-trichloroanisole content of tainted cork. *Journal of Chromatography A.* 953: 207-214.

JUANOLA, R.; SUBIRÀ, D.; SALVADÓ, V.; GARCIA REGUEIRO, J.A.; ANTICÓ, E. (2005). Migration of 2,4,6-trichloroanisole from cork stoppers to wine. *Eur. Food Res. Technol.* 220: 347-352.

KUN, E.P.; SUFLITA, J.M. (1989). Dehalogenation of pesticides by aerobic microorganisms in soil and groundwater – A review. In: *Reactions and movements of organic chemical soils*. Ed. Soil Science Society of America and American Society of Agronomy; pp.111-180.

LEFEBVRE, A.; RIBOULET, J.M.; BOIDRON, J.N.; RIBEREAU-GAYON, P. (1983). Incidence des microrganismes du liège sur les altérations olfactives du vin. *Sci. Aliment.* 3: 265-278.

LEFEBVRE, A. (1988). Le bouchon liege des vins tranquilles. *Connaiss. Vigne Vin.* Numéro hors Série : 13-33.

LIZARRAGA, E.; IRIGOYEN, A.; BELSUE, V.; GONZÁLEZ-PENAS, E. (2004). Determination of chloroanisole compounds in red wine by head-space solid-phase microextraction and gas chromatography-mass spectrometry. *Journal of Chromatography A.* 1052: 145-149.

LORENZO, C.; ZALACAIN, A.; ALONSO, G.L.; SALINAS, M.R. 2006. Non-destructive method to determine halophenols and haloanisoles in cork stoppers by headspace sorptive extraction. *Journal of Chromatography A.* 1114: 250-254.

MAARSE, H.; NIJSSEN, L.M.; ANGELINAS, S. (1988). Halogenated phenols and chloroanisole: occurrence, formation and prevention. In: M. Rothe (Ed.), *Characterization, Production and Application of Food Flavours*, Akademie Verlag, Berlin, 1988: 43-63.

MAARSE, H.; NIJSSEN, L.M.; ANGELINAS, S. (1989). Halogenated phenols and chloroanisole: occurrence, formation and prevention. *Atti del 2<sup>nd</sup> Wartburg Aroma Symposium*.

MAGA, J.A.; PUECH, J.-L. (2005). Cork and alcoholic beverages. *Food Reviews International*. 21: 53-68.

MARGALIT, Y. (1997). Oak products (Cooperage and cork). In: Crum, J., ed. *Concepts in Wine Chemistry*. San Francisco, CA: The Wine Appreciation Guild; pp. 236-252.

MARAIS, P.G.; GRUGER, M.M. (1975). Fungus contamination of corks responsible for unpleasant odours in wine. *Phytophylactica*. 7(3):115-116.

MARTINEZ-URUNUELA, A.; GONZALEZ-SAIZ, J.M.; PIZARRO, C. (2004). Optimisation of a headspace SPME method for the determination of chloroanisoles related to cork taint in red wine. *Journal of Chromatography A.* 1056: 49-56.

MARTINEZ-URUNUELA, A.; RODRÍGUEZ, I.; CELA, R.; GONZALEZ-SAIZ, J.M.; PIZARRO, C. (2005). Development of a solid-phase extraction method for the

simultaneous determination of chloroanisoles and chlorophenols in red wine using gas chromatography-tandem mass spectrometry. *Analytica Chimica Acta.* 549: 177-123.

MATHIEU, L. (1900). Les gout de bouchon dans le vins mousseux. *Rev. Viticulture.* 1: 273-278.

MAUJEAN, A.; MILLERY, P.; LEMARESQUIER, H. (1985). Explications biochimiques et metaboliques de la confusion entre goût de bouchon et goût de mois. *Rev. Franc. Oenol.* 24: 55-62.

MAZZOLENI, V.; FUMI, M.D.; MOLTENI, R. (1999). Use of electron beam irradiation in the manufacturing of cork stoppers. Effects on cork quality as affected by irradiation doses. *Actualités Oenologiques – VI Symposium International d’Oenologie – Bordeaux 10-12 giugno 1999 (Faculté d’Oenologie, Talence)*, 551-554.

MAZZOLENI, V.; CARERI, M.; MUSCI, M.; MOLTENI, R. (1999). Effects of electron beam irradiation on cork volatile compounds by gas-chromatography-mass spectrometry. *Chromatographia*, , 3-4/53, 166-172.

MAZZOLENI, V.; MAGGI, L. (2004). Impatto sensoriale del 2,4,6,-tricloroanisolo in differenti tipologie di vino. *Atti 3<sup>a</sup> Giornata di studio sul sughero in enologia.*

MICHELLOD, R.; FABRE, S. (1993). Traitement des bouchons et détection de résidus oxydans. In: *Atti del 5<sup>o</sup> Simposio Internazionale sul vino: Il sughero in Enologia. 13-14 maggio, Pavia ; Chirietti Ed., Pinerolo*, 83-91.

MOHN, W.W.; KENNEDY, K.J. (1992). Reductive dehalogenation of chlorophenols by desulfomonile tiedjei DCB-1. *Applied and Environmental Microbiology*. 58: 1367-1370.

MOREAU, M.; MOREAU, C.; LE BRAS, M.A. (1976). Quelques moisissures responsables d'altérations de bouchons de Champagne. *Ind. Alim. Agric.* 93(3): 317-320.

MOREAU, M. (1977). Alterations de bouchons par quelques moisissures. *Rev. Frac. Oenol.* 16(6): 63-67.

MOREAU, M. (1978). La mycoflore des bouchons de liège. Son évolution au contact du vin, conséquences possibles du métabolisme des moisissures. *Rev. Mycol.* 42(3): 155-189.

NATURAL CORK QUALITY COUNCIL, Santa Rosa California,  
<http://www.corkqc.com>

NEIDLEMANN, S.L.; GEIGERT, J. (1986). Biohalogenation: principles, basic roles and applications. Ellis Harwood, Chichester chapters.

NERADT, T. (1982). Sources of reinfections during cold-sterile bottling of wine. *Am. J. Enol. Vitic.* 33(3): 140-144.

NICHOLSON, D.K.; WOODS, S.L.; ISTOK, J.D.; PEEK, D.C. (1992). Reductive dechlorination of chlorophenols by a pentachlorophenol acclimated methanogenic consortium. *Applied and Environmental Microbiology*. 58: 2280-2286.

- PENA-NEIRA, A.; DE SIMON, B.F.; GARCIA-VALLEJO, M.C.; HERNANDEZ, T.; CADAHIA, E.; SUAREZ, J.A. (2000). Presence of cork-taint responsible compounds in wines and their cork stoppers. European Food Research and Technology. 211: 257-261.
- PEREIRA, H. (1992). The thermochemical degradation of cork. Wood Sci. Technol. 26: 259-269.
- POLLNITZ A.P. ; PARDON, K.H. ; LIACOPOULOS, D. ; SKOUROUMOUNIS, G.K. ; SEFTON, M.A. (1996). The analysis of 2,4,6-trichloroanisole and other chloroanisoles in tainted wines and corks. Australian Journal of Grape and Wine Research. 2: 184-190.
- PROGETTO QUERCUS. (1996). Confederazione Europea del Sughero. Parigi, 22 novembre 1996.
- PRESCOTT, J.; NORRIS, L.; KUNST, M.; KIM, S. (2005). Estimating a “consumer rejection threshold” for cork taint in white wine. Food Quality Preference. 16: 345-349.
- PUERTO, F. (1992). Traitement des bouchons: lavage au peroxyde controlé. Rev. Œnologues. 18(64): 21-26.
- RIBOULET, J.M. (1982). Contribution à l'étude chimique et microbiologique des “goûts de bouchon” dans les vins. Thèse a l'Université de Bordeaux II.
- RIU, M.; MESTRES, M., BUSTO, O.; GUASCH, J. (2002). Determination of 2,4,6-trichloroanisole in wine by headspace SPME and GC-ECD. Journal of Chromatography A. 997: 1-8.

- RIU, M.; MESTRES, M., BUSTO, O.; GUASCH, J. (2006). Quantification of chloroanisoles in cork using headspace solid-phase microextraction and gas chromatography with electron capture detection. *Journal of Chromatography A.* 1107: 240-247.
- ROCHA, S; DELGADILLO, I.; FERRER-CORREIA, A.J. (1996). Improvement of the volatile components of cork from *Quercus suber* L. by an autoclaving procedure. *J. Agric. Food Chem.* 44: 872-876.
- ROSA, M.E.; PEREIRA, H; FORTES, M.A. (1990). Effects of hot water treatment on the structure and properties of cork. *Wood and Fiber Science.* 22(2): 149-164.
- ROSA, M.E.; PEREIRA, H. (1994). The effect of longterm treatment at 100-150 °C on structure, chemical composition and compression behaviour of cork. *Holzforschung.* 48: 226-232.
- SANVICENS, N.; SANCHEZ-BAEZA, F.; MARCO, M. P. (2003). Immunochemical determination of 2,4,6-trichloroanisole as the responsible agent for the musty odor of food. 1. Molecular modeling studies for antibody production. *Journal of Agricultural and Food Chemistry.* 51: 3924-3931.
- SCHAEFFER, A; MEYER, J.P. (1979). Etude sur l'origine du “goût de bouchon” dans les vins. *La presse du Vin Vinetec;* nov.-dic.: 32-34.
- SEFTON, M.A.; SIMPSON, R.F. (2005). Compounds causing cork taint and the factors affecting their transfer from natural cork closures to wine – a review. *Australian Journal of Grape and Wine Research.* 11: 226-240.

SILVA PEREIRA, C.; PIRES, A.; VALLE, M.J.; VILAS BOAS, L.; FIGUEIREDO MARQUES, J.J.; SAN ROMAO M.V. (2000a). Role of Chrysonilia sitophila in quality of cork stoppers for sealing wine bottles. *Journal of Industrial Microbiology & Biotechnology*. 24: 256-261.

SILVA PEREIRA, C.; FIGUEIREDO MARQUES, J. J.; SAN ROMAO, M.V. (2000b). Cork taint in wine: scientific knowledge and public perception. A critical review. *Critical Reviews in Microbiology*. 26: 147-162.

SIMPSON, R.F; AMON, J.M.; DAW, A.J. (1986). Off-flavour in wine caused by guaiacol. *Food Technology Australian*. 38: 31-33.

SIMPSON, R.F. (1990). Cork taint in wine: a review of the causes. *Australian and New Zealand Wine Industry Journal*. 5: 286-293.

SIMPSON, R.F.; CAPONE, D.L.; SEFTON, M.A. (2004). Isolation and identification of 2-methoxy-3,5-dimethylpyrazine, a potent musty compound from wine corks. *J. Agric. Food Chem.* 52: 5425-5430.

SOLEAS, G.J.; YAN, J.; SEAVER, T.; GOLDBERG, D.M. (2002). Method for the gas chromatographic assay with mass selective detection of trichloro compounds and wines applied to elucidate the potential cause of cork taint. *J. Agric. Food Chem.* 50: 1032-1039.

SPONHOLZ, W.R.; MUNO, H. (1994). Corkiness: a microbiological problem? In: The cork in oenology. Proceedings of 5th International Congress of Wine. Chirietti Editori Pinerolo; pp. 100-106.

SUPRENANT, A. ; BUTZKE, C. E. (1996). Implications of odor threshold variations on sensory quality control of cork stoppers. In Proceedings 4th International Symposium on Cold Climate Viticulture and Enology; Communication Service, New York Service Agricultural Experimental Station: Geneva , NY; pp. 70-74.

TANNER, H.; ZANIER, C.; WURDING, G. (1981). Zur analytischen differenzierung von muffton und korkgeschmack in wein. Schweiz. Z. Obst Weinbau. 117: 752-757.

TAYLOR, M.K.; YOUNG, T.M.; BUTZKE, C.E.; EBELER, S.E. (2000). Supercritical Fluid Extraction of 2,4,6-trichloroanisole from cork stoppers. J. Agric. Food Chem. 48: 2208-2211.

THE MERCK INDEX, 12° ed. (1996). Merck & Co., Inc. Whitehouse Station, NJ.

TINDALE, C.R.; WHITFIELD, F.B.; LEVINGSTON, S.D.; NGUYEN, T.H.L. (1989). Fungi isolated from packaging materials: their role in the production of 2,4,6-trichloroanisole. Journal Science Food Agriculture. 49: 437-447.

UIJL, C.H. (1992). Heat treatment of spices. Beating the bugs ! international Food Ingredients. 3: 9-11.

VALADE, M.; PANAIOTIS, F.; TRIBAUT-SOHIER, I. (1993). Les problemes organoleptiques lies au bouchon liege. Le Vigneron Champenois. 3/3/93.

VERENITCH, S.S.; LOWE, C.J.; MAZUMDER, A. (2006). Determination of acidic drugs and caffeine in municipal wastewaters and receiving waters by gas chromatography-ion trap tandem mass spectrometry. Journal of Chromatography A. 1116: 193-203.

WHITFIELD, F.B.; HILL, J.L.; SHAW, K.J. (1997). 2,4,6-Tribromoanisole : a potential cause of mustiness in packaged food. *Journal of Agricultural and Food Chemistry.* 45: 889-893.

ZALACAIN, A.; ALONSO, G.L.; LORENZO, C.; IÑIGUEZ, M.; SALINAS, M.R. (2004). Stir bar sorptive extraction for the analysis of wine cork taint. *Journal of Chromatography A.* 1033: 173-178.