CONCLUSIONES

CONCLUSIONES

De los resultados obtenidos a modo de conclusiones podemos destacar:

1. Las especies del género *Aspergillus* se aíslan frecuentemente en los substratos estudiados, en especial en piensos. Su recuento parcial en este tipo de muestras representa más del 50% del recuento fúngico total.

2. De las especies productoras de OA aisladas en el presente estudio, la frecuencia de aislamiento de *Aspergillus niger* es superior a la de *A. ochraceus*.

3. Las cepas tipo de las dos especies propuestas en el agregado *A. niger*, *A. niger* CBS 554.65 y *A. tubingensis* CBS 134.48 están muy próximas en términos filogenéticos, por lo que podría tratarse de una misma especie.

4. La digestión con *Rsa*I del fragmento 5.8S-ITS rDNA amplificado mediante PCR es un sistema fácil, práctico y rápido para clasificar cepas del agregado *A. niger* en las dos especies propuestas.

5. Las cepas de los dos grupos N y T son morfológicamente indistinguibles. Las pequeñas diferencias observadas no constituyen una característica práctica para diferenciar ambos grupos.

6. La temperatura óptima de crecimiento de las cepas del agregado *A. niger* es de 35ºC, no desarrollándose por debajo de 10ºC, ni por encima de los 50ºC. Al considerar la división del agregado en los grupos N y T, las cepas tipo T presentan una temperatura óptima de 35ºC y las tipo N de 30-35ºC.

7. Las cepas tipo T se diferencian de las tipo N por desarrollarse más rápidamente a la temperatura más baja (10ºC) en la que se obtuvo el desarrollo de las especies del agregado.

8. El crecimiento de las cepas del agregado *A. niger* se ve favorecido a concentraciones bajas de cloruro sódico, observándose una mayor tolerancia a 25ºC que a 35ºC. Los grupos de cepas N y T presentan una respuesta similar al NaCl.

9. El método de extracción de OA a partir de los bocados de cultivos en YES agar o CYA, y su detección mediante TLC ha resultado ser un buen método de criba para detectar cepas productoras de OA, debido a su sencillez y bajo coste de realización.

10. Todas las cepas ocratoxigénicas del agregado *A. niger* con patrón de RFLP conocido pertenecen al grupo N, por lo que los aislamientos del grupo T parecen no ser capaces de producir OA.

11. Las dos grupos de cepas N y T no presentan entidad suficiente para ser considerados como pertenecientes a especies distintas.

BIBLIOGRAFÍA

1. Abarca ML, MR Bragulat, G Castellá, F Accensi y FJ Cabañes. 1997. New ochratoxigenic species in the Genus *Aspergillus*. J. Food Prot. 60: 1580-1582.

2. Abarca ML, MR Bragulat, G Castellá y FJ Cabañes. 1994. Mycoflora and aflatoxin-producing strains in animal mixed feeds. J. Food Prot. 3: 256-258.

3. Abarca ML, MR Bragulat, G Castellá y FJ Cabañes. 1994. Ochratoxin A production by strains of *Aspergillus niger* var *niger*. Appl. Environ. Microbiol. 60: 2650-2652.

4. Abdel Kader MIA, AH Moubasher y SII Abdel Hafez. 1979. Survey of the mycoflora of barley grains in Egypt. Mycopathologia. 68: 143-147.

5. Abramson D. 1991. Development of molds, mycotoxins and odors in moist cereals during storage. En: Cereal grain. Mycotoxins, fungi and quality in drying and storage. Ed: Chelkowski J. Elsevier. Amsterdam. Pp: 119-147.

6. Abramson D y RM Clear. 1996. A convenient method for assessing mycotoxin production in cultures of Aspergilli and Penicillia. J. Food Prot. 59: 642-644.

7. Accensi F, J Cano, L Figuera, ML Abarca y FJ Cabañes. 1999. New PCR method to differentiate species in the *Aspergillus niger* aggregate. FEMS Microbiol. Lett. 180: 191-196.

8. Adatia R, JM Heaton, KM Macgeorge y PG Mantle. 1991. Acute histopathological changes produced by *Penicillium aurantiogriseum* nephrotoxin in the rat. Int. J. Exp. Path. 72: 47-53.

9. Aja Nwachukwu J y SO Emejuaiwe. 1994. Aflatoxin-producing fungi associated with nigerian maize. Environ. Toxicol. Water Quality. 9: 17-23.

10. Anderson JH. 1979. In vitro survival of human pathogenic fungi in seawater. Sabouradia. 17: 1-12.

11. Al Musallam A. 1980. Revision of the black *Aspergillus* species. Tesis doctoral. Universidad de Utrech. Utrech. Holanda.

12. Atapattu R y U Samarajeewa. 1990. Fungi associated with dried fish in Sri Lanka. Mycopathologia. 111: 55-59

13. Ayerst G. 1969. The effects of moisture and temperature on growth and spore germination in some fungi. J. Stored Prod. Res. 5: 127-141.

14. Aziz NH y AAM Shahin. 1997. Influence of other fungi on aflatoxin production by Aspergillus flavus in maize kernels. J. Food Saf. 17: 113-123.

15. Bacha H, K Maaroufi, L Ghedira Chekir, S Abid, A Cherif, A. Achour y EE Creppy. 1999. Mycotoxins and mycotoxicosis in Tunisia: What do we know and what do we need to know? J. Toxicol-Toxin Reviews. 18: 245-262.

16. Bainbridge BW. 1994. Modern approaches to the taxonomy of Aspergillus. En: The genus *Aspergillus*. From taxonomy and genetics to industrial application. Ed: Powell KA, A Renwick y JF Peberdy. Plenum Press. NY. Pp: 291-302.

17. Ballestra P y JLCuq. 1998. Influence of presurized Carbon monoxide on the thermal inactivation of bacterial and fungal spores. Lebensm. Wiss. Technol. 31: 84-88.

18. Barna-Vetró I, Solti L, J Téren, A Gyöngyösi, E Szabó y A Wölfling. 1996. Sensitive ELISA test for determination of ochratoxin A. J. Agric. Food Chem. 44: 4071-4074.

19. Bauer J y M Gareis. 1987. Ochratoxin A in der Nahrungsmittelkette. Z. Veterinärmed. B. 34: 613-627.

20. Bauduret P. 1990. A mycological and bacteriological survey on feed ingredients and mixed poultry feeds in Reunion Island. Mycopathologia. 109: 157-164.

21. Betina V. 1993. Thin layer chromatography of mycotoxins. En: Chromatography of mycotoxins. Techniques and applications. Ed: Betina V. Elsevier. Amsterdam. Pp: 141-253.

22. Beuchat LR. 1987. Food and beverage mycology. 2ª Ed. Van Nostrand Reinhold. NY.

23. Beuchat LR. 1987. Traditional fermented food products. En: Food and beverage mycology. 2ª Ed. Ed: Beuchat LR. Van Nostrand Reinhold. NY. Pp: 269-306

24. Bigelis R y LL Lasure. 1987. Fungal enzymes and primary metabolites used in food processing. En: Food and beverage mycology. 2ª Ed. Ed: Beuchat LR. Van Nostrand Reinhold. NY. Pp: 473-516.

25. Boutrif E y C Canet. 1998. Mycotoxin prevention and control: FAO programmes. Revue Méd. Vét. 149: 681-694.

26. Bragulat MR, ML Abarca, F Accensi y FJ Cabañes. 1998. New screening method for ochratoxigenic molds in pure cultures. Revue Méd. Vét. 149: 515.

27. Bragulat MR, ML Abarca, G Castellá y FJ Cabañes. 1995. A mycological survey on mixed poultry feeds and mixed rabbit feeds. J. Sci. Food Agric. 67: 215-220.

28. Breitholz A, M Olsen, A Dältbhack y K Hult. 1991. Plasma Ochratoxin A levels in three Swedish populations surveyed using an ion-pair HPLC technique. Food Addit. Contam. 8: 183-192.

29. Broncato FP y NS Golding. 1953. The diameter of mold colony as a reliable measure of growth. Mycologia. 45: 848-864.

30. Bucheli P, I Meyer, A Pittet, G Vuataz y R Viani. 1998. Industrial Storage of Green Robusta Coffee under Tropical Conditions and Its Impact on Raw Material Quality and Ochratoxin A Content. J. Agric. Food Chem. 46: 4507-4511.

31. Burdaspal PA y TM Legarda.1998. Ochratoxin A in roasted and soluble coffees marketed in Spain. Alimentaria. 292: 103-109.

32. Burdaspal PA y TM Legarda. 1998. Datos sobre la presencia de ocratoxina A en plasma humano en España. Alimentaria. 296: 31-35.

33. Burdaspal PA y TM Legarda. 1999. Ochratoxin A in wines and grape products originated from Spain and other European countries. Alimentaria. 299: 107-113.

34. Cabañes FJ, ML Abarca, MR Bragulat y G Castellá. 1993. Sodium tolerance in strains of *Epidermophyton floccosum* y *Epidermophyton stockdalae*. Mycopathologia. 124: 153-156.

35. Campbell CK. 1994. Forms of aspergillosis. En: The genus *Aspergillus*. From taxonomy and genetics to industrial application. Ed: Powell KA, A Renwick y JF Peberdy. Plenum Press. NY. Pp: 313-319.

36. Canela R, R Viladrich, CA Velázquez y V Sanchis. 1994. A survey of porcine kidneys and chicken liver for ochratoxin A in Spain. Mycopathologia. 125: 29-32.

37. Carballo M y JA Miguel. 1985. Micoflora y mohos toxigénicos en trigo. Rev. Iber. Micol. 2: 119-125.

38. Castegnaro M, H Bartsch y IN Chernozemsky. 1987. Endemic nephropathy and urinary tract tumours in the Balkans. Cancer Res. 47: 3608-3609.

39. Castegnaro M y D McGregor. 1998. Carcinogenic risk assessment of mycotoxins. Revue Méd. Vét. 149: 671-678.

40. Castellá G, MR Bragulat y FJ Cabañes. 1996. Mycoflora and fumonisin-producing strains of *Fusarium moniliforme* in mixed poultry feeds and component raw material. Mycopathologia. 133: 181-184.

41. Castro MFPM, LMV Soares y RPZ Soares. 1995. Mycoflora, aflatoxigenic species and mycotoxins in freshly harvested corn (*Zea mays*, L.): a preliminary study. Rev. Microbiol. 26: 289-295.

42. Ciegler A. 1971. Bioproduction of ochratoxin A and penicillic acid by members of the *Aspergillus ochraceus* Group. Can. J. Microbiol. 18: 631-636.

43. Clarke JR, RR Marquardt, AA Frohlich y RJ Pitura. 1994. Quantification of Ochratoxin A in Swine kidneys by Enzime-linked Immunosorbent Assay using a simplified sample preparation prodcedure. J. Food Protec. 57: 991-995.

44. Cook WO. 1986. Ochratoxicosis in Iowa swine. J. Amer. Vet. Medical Assoc. A. 188: 1399-1402.

45. Cook PE y G Campbell Platt. 1994. *Aspergillus* and fermented foods. En: The genus *Aspergillus*. From taxonomy and genetics to industrial application. Ed: Powell KA, A Renwick y JF Peberdy. Plenum Press. NY. Pp: 171-188.

46. Corrêa B, M Galhardo, EO Costa y M Sabino. 1997. Distribution of molds and aflatoxins in dairy cattle feeds and raw milk. Rev. Microbiol. 28: 279-283.

47. Corry JEL. 1987. Relationships of water activity to fungal growth. En: Food and beverage mycology. 2ª Ed. Ed: Beuchat LR. Van Nostrand Reinhold. NY. Pp: 51-58.

48. Croft JH, V Bhattacherjee y KE Chapman. 1990. RFLP analysis of nuclear and mitochondrial DNA and its use in *Aspergillus* systematics. En: Modern concepts in *Penicillium* and *Aspergillus* classification. Ed: Samson RA y JI Pitt. Plenum Press. NY. Pp: 309-319.

49. Croft JH y J Varga. 1994. Application of RFLPs in systematic and population genetics of Aspergilli. En: The genus Aspergillus. From taxonomy and genetics to industrial application. Eds: Powell KA, A Renwick y JF Peberdy. Plenum Press. NY. Pp: 277-289.

50. Cuppers HG, S Oomes y S Brul. 1997. A model for the combined effects of temperature and salt concentration on growth rate of food spoilage molds. Appl. Environ. Microbiol. 63: 3764-3769.

51. Cvetnic Z y S Pepeljnjak. 1990. Ochratoxinogenicity of *Aspergillus ochraceus* strains from nephropathic and non-nephropathic areas in Yugoslavia. Mycopathologia. 110: 93-99.

52. Cvoriscec D, S Ceovic, G Borso y AS Rukavina. 1998. Endemic Nephropathy in Croatia. Clin. Chem. Lab. Med. 36: 271-277.

53. Chang CF, JA Doerr y PB Hamilton. 1981. Experimental ochratoxicosis in turkey poults. Poult. Sci. 60: 114-119.

54. Chang CF y PB Hamilton. 1980. Impairment of phagocytosis by heterophils from chickens during ochratoxicosis. Appl. Environ. Microbiol. 39: 279-269.

55. Chang Yen I, K Bidasse y G Rampersad. 1992. Mycoflora and mycotoxin producing potential of fungi from poultry feeds and feed ingredients in Trinidad. J. Sci. Food Agric. 60: 283-286.

56. Chelkowski J. 1991. Cereal grain, Mycotoxins, Fungi and quality in Drying and Storage. Developments in Food Science. Vol. 26. Chelkowski J. Elsevier. Amsterdam.

57. Chelkowski J. 1991. Mycological quality of mixed feeds and ingredients. En: Cereal grain, Mycotoxins, Fungi and quality in Drying and Storage. Developments in Food Science. Vol. 26. Chelkowski J. Elsevier. Amsterdam. Pp: 217-227.

58. Chelkowski J, RA Samson, M Wiewiórowska y P Golinski. 1987. Ochratoxin A formation by isolated strains of the conidial stage of *Aspergillus glaucus* Link ex Grey (= *Eurotium herbariorum* Wiggers Link ex Gray) from cereal grains. Die Nahrung. 4: 267-269.

59. Choudhury H, CW Carlson y G Semeniuk. 1971. A study of ochratoxin in hens. Poult. Sci. 50: 1855-1859.

60. Dalcero A, C Magnoli, S Chiacchiera, G Palacio y M Reinoso. 1997. Mycoflora and incidence of aflatoxin B_1, zearalenona and deoxynivalenol in poultry feeds in Argentina. Mycopathologia. 137: 179-184.

61. Dalcero A, C Magnoli, M Luna, G Ancasi, MM Reynoso, S Chiacchiera, R Miazzo y G Palacio. 1998. Mycoflora and naturally occurring mycotoxins in poultry feeds in Argentina. Mycopathologia. 141: 37-43.

62. Davis ND, RE Wagener, G Morgan Jones y UL Diener. 1974. Toxigenic thermophilic and thermotolerant fungi. Appl. Microbiol. 29: 455-457.

63. Degelmann P, M Becker, M Herderich u HU Humpf. 1999. Determination of Ochratoxin A in beer by High-Performance Liquid Chromatography. Chromatographia. 49: 543-546.

64. Depebeaupuis JP, J Sarfati, V Chazalet y JP Latg. 1997. Genetic diversity among clinical and environmental isolates of *Aspergillus fumigatus*. Infect. Immun. 65: 3080-3085.

65. Dirheimer G. 1998. Recent advances in the genotoxicity of mycotoxins. Revue Méd. Vét. 149: 605-616.

66. Doerr JA, WE Huff, HT Hung, RD Wyatt y PB Hamilton. 1974. A survey of T-2 toxin, ochratoxin, and aflatoxin for their effects on the coagulation of blood in young broiler chickens. Poult Sci, 53: 1728-1734.

67. Domingo M, M Pumarola, J Visa, ML Abarca y MR Bragulat. 1991. Systemic mycosis caused by *Aspergillus fumigatus* in striped dolphins (*Stenella coeruloalba*). European Cetacean Society 5th Annual Conference. Sandefjord. 21-23 Febrero 1991. Pp: 65.

68. Domsch KH, W Gams y TH Anderson. 1980. Compendium of soil fungi. Academic Press. London.

69. Dzawachiszwili N, JW Landau, VD Newcomer y OA Plunnkett. 1964. The effect of sea water and sodium chloride on the growth of fungi pathogenic to man. J. Invest. Dermat. 43: 103-109.

70. van Egmond HP. 1991. Limits and regulations for mycotoxins in raw materials and animals feeds. En: Mycotoxins and animal foods. Ed: Smith JE y RS Henderson. CRC Press. Boca Ratón. Pp: 423-436.

71. van Egmond HP. 1996. Analytical methodology and regulations for ochratoxin A. Food Addit. Contam. 13 (supl.): 11-13.

72. Elissalde MH, RL Ziprin, WE Huff, LF Kubena y RB Harvey. 1994. Effect of ochratoxin A on *Salmonella*-challenged broiler chicks. Poult. Sci. 73: 1241-1248.

73. Ellis DH. 1980. Thermophilic fungi isolated from a heated aquatic habitat. Mycologia. 72: 1030-1033.

74. Ellis DH y PJ Keane. 1981. Thermophilic fungi isolated from some australian soils. Aust. J. Bot. 29: 689-704.

75. Eman Mostafa M. 1995. Progesterone transformation as a diagnostic feature in the classification of the *Aspergillus niger* group. Lett. Appl. Microbiol. 20: 243-246.

76. Estruch JJ, C Antuña, S Ferrer y D Ramón. 1989. Aislamiento de DNA genómico de *Trichophyton mentagrophytes*. Rev. Ibér. Micol. 6: 62-66.

77. Filtenborg O y JC Frisvad. 1980. A simple screening-method for toxigenic moulds in pure cultures. Lebensmitt. Wiss. Technol. 13:128-130.

78. Filtenborg O, JC Frisvad y JA Svendsen. 1983. Simple screening method for molds producing intracellular mycotoxins in pure cultures. Appl. Environ. Microbiol. 45: 581-585.

79. Filtenborg O, JC Frisvad y U Thrane. 1990. The significance of yeast extract composition on metabolite production in *Penicillium*. En: Modern Concepts in *Penicillium* and *Aspergillus* classification. Ed: Samson RA y JI Pitt. Plenum Press. NY. Pp: 433-440.

80. Food and Agriculture Organization. 1997. Worldwide regulations for mycotoxins 1995. a compendium. FAO Food and Nutrition Paper 64. Roma.

81. Fox JG, JC Murphy y M Shalev. 1978. Systemic fungal infections in cats. J. Amer. Vet. Medical Assoc. 241: 1191-1195.

82. Frisvad JC y O Filtenborg. 1983. Classification of terverticillate Penicillia based on profiles of mycotoxins and other secondary metabolites. Appl. Environ. Microbiol. 46: 1301-1310.

83. Frisvad JC, DL Hawksworth, Z Kozakiewicz, JI Pitt, RA Samson y AC Stolk. 1990. Proposals to conserve important species names in *Aspergillus* and *Penicillium*. En: Modern Concepts in *Penicillium* and *Aspergillus* Classification. Ed: RA Samson y JI Pitt. Plenum Press. NY. Pp: 83-89.

84. Frisvad JC y RA Samson. 1990. Chemotaxonomy and morphology of *Aspergillus fumigatus* and related taxa. En: Modern Concepts in *Penicillium* and *Aspergillus* Classification. Ed: RA Samson y JI Pitt. Plenum Press. NY. Pp: 201-208.

85. Frisvad JC y RA Samson. 1991. Mycotoxins produced by species of *Penicillium* and *Aspergillus* occurring in cereals. En: Cereal grain. Mycotoxins, fungi and quality in drying and storage. Ed: Chelkowski J. Elsevier. Amsterdam. Pp: 441-476.

86. Frisvad JC y U Thrane. 1996. Mycotoxin production by food-borne fungi. En: Introduction to food-borne fungi. 5ª Ed. Ed: Samson RA, ES Hoekstra, JC Frisvad y O Filtenborg. CBS. Baarn. Pp: 251-260.

87. Frohlich AA, RR Marquadt y JR Clarke. 1997. Enzymatic and immunological approaches for the quantitation and confirmation of ochratoxin A in swine kidneys. J. Food Prot. 60: 172-176.

88. Fuhrman B, MF Roquebert, V Lebreton y M van Hoegaerden. 1990. Immunological differentiation between *Penicillium* and *Aspergillus* taxa. En: Modern Concepts in *Penicillium* and *Aspergillus* Classification. Ed: Samson RA y JI Pitt. Plenum Press. NY. Pp: 423-432.

89. Fukal L y H Reisnerova. 1990. Monitoring of aflatoxins and ochratoxin A in Czechoslovakia human sera by immunoassay. Bull. Environ. Contam. Toxicol. 44: 345-349.

90. Galtier P. 1998. Biological fate of mycotoxins in animals. Revue Méd Vét. 149: 549-554.

91. Gams W y RA Samson, Tipification of *Aspergillus* and related teleomorph genera. 1985. En: Advances in *Penicillium* and *Aspergillus* systematics. Ed: Samson RA y JI Pitt. Plenum Press. NY. Pp: 23-31.

92. Gams W, M Christensen, AHS Onions, JI Pitt y RA Samson. Infrageneric taxa of *Aspergillus*. 1985. En: Advances in *Penicillium* and *Aspergillus* systematics. Ed: Samson RA y JI Pitt. Plenum Press. NY. Pp: 55-64.

93. Gareis M, E Märtlbauer, J Bauer y B Gedek. 1988. Determination of ochratoxin A in human milk. Z. lebensm. Unters. Forsch. 186: 114-117.

94. Gené J, JM Guillamón, J Guarro, I Pujol y K Ulfig. 1996. Molecular characterization, relatedness and antifungal susceptibility of the basidiomycetous *Hormographiella* species and *Coprinus cinereus* from clinical and environmental sources. Antoine van Leeuwenhoek. 70: 49-57.

95. Gimeno A. 1979. Thin Layer Chromatographic Determination of Aflatoxins, ochratoxins, Sterigmatocystin, Zearalenone, Citrinin, T-2 Toxin, Diacetoxyscirpenol, Penicillic Acid, Patulin and Penitrem A. J. Assoc. Off. Anal. Chem. 62: 579-585.

96. Gimeno A y ML Martins. 1982. Multimycotoxin meted for analysis of 17 mycotoxins in raw materials, mixed feeds, food products and animal tissues by thin layer chromatography. En: Proceedings of the V International IUPAC Symposium on Mycotoxins and phycotoxins. Viena. Austria. Pp: 24-27.

97. Greuter W, FR Barrie, HM Burdet, WG Chaloner, V Demoulin, DL Hawksworth, PM Jorgensen, DH Nicolson, PC Silva, P Trehane y J McNeill. 1994. International Code of Botanical Nomenclature (Tokyo Code) Adopted by the Fifteenth International Botanical Congress, Yokohama, August-September 1993. Regnum Vegetabile. 131.

98. Golinski P, K Hult, J Grabarkiewicz Szcesna, J Chelkowski, P Kneblewski y K Szebioto. 1984. Mycotoxic porcine nephropathy and spontaneous occurrence of ochratoxin A residues in kidneys and blood of polish swine. Appl. Environ. Microbiol. 47: 1210-1212.

99. Golinski P, K Hult, J Grabarkiewicz Szcesna, J Chelkowski y K Szebioto. 1985. Spontaneous occurrence of ochratoxin A residues in porcine kidney and serum samples in Poland. Appl. Environ. Microbiol. 49: 1014-1015.

100. González HHL, EJ Martínez y SL Resnik. 1997. Fungi associated with sorghum grain from Argentina. Mycopathologia. 139: 35-41.

101. de Groene EM, IGAM Hassing, MJ Blom, W Seinen, J Fink Gremmels y GJ Horbach. 1996. Development of human cytochrome P450-expressing cell lines: application in mutagenicity testing of ochratoxin A. Cancer Res. 56: 299-304.

102. Guarro J, J Gené y FJ Pastor. 1991. Las infecciones por hongos oportunistas, un viejo problema que resurge. Rev. Esp. Microbiol. Clin. Febrero: 59-67.

103. Hadlok RM. 1993. Human ochratoxicosis in Germany updating 1993. En Human ochratoxicosis and its pathologies. Ed: Creppy EE, M Castegnaro y G Dirheimer. Colloque INSERM/John Libbey Eurotext. 231: 141-145.

104. Hamari Z, F Kevei, E Kovács, J Varga, Z Kozakiewicz y JH Croft. 1997. Molecular and phenotypic characterisation of *Aspergillus japonicus* strains with special regard to their mitochondrial DNA polymorphisms. Antoine van Leeuwenhoek. 72: 337-347.

105. Hamilton PB, Hoff WE, Harris JR, Wyatt RD. 1982. Natural occurrence of ochratoxicosis in poultry. Poultry Science. 61: 1382-1841.

106. Harrison JL y EBG Jones. 1974. Patterns of salinity tolerance displayed by the lower fungi. Veröff. Inst. Meeresforch. Bremerh. Suppl. 5: 197-220.

107. Haubeck HD, D Lorkowski, E Kolsch y R Röschenthaler. 1981. Immunosupresion by ochratoxin A and its prevention by phenilalanine. Appl. Environ. Microbiol. 41: 1014-1042.

108. Hawksworth DL, PM Kirk, BC Sutton y DN Pegler. 1995. Ainsworth & Bisby's Dictionary of the fungi. 8ª Ed. CAB International. University Press. Cambridge.

109. Heenan CN, KJ Shaw y JI Pitt. 1998. Ochratoxin A production by *Aspergillus carbonarius* and *A. niger* isolates and detection using coconut cream agar. J. Food Mycol. 1: 67-72.

110. Hernández E y T Huerta. 1993. Evolución de los parámetros microbiológicos del jamón curado. Microbiologia SEM. 9: 10-19.

111. Hesseltine CW, EE Vandegraft, DI Fennell, ML Smith y OL Shotwell. 1972. Aspergilli as ochratoxin producers. Mycologia. 64: 539-550.

112. Hoerr FJ. Mycotoxicoses. 1997. En Diseases of poultry. 10ª Ed. Eds: Calnek BW, HJ Barnes, CW Beard, LR McDougald y YM Saif. Mosby-Wolfe. Londres. Pp: 951-979.

113. Höhler D. 1998. Ochratoxin A in food and feed: occurrence, legislation and mode of action. Z. Ernährungswiss. 37: 2-12.

114. de Hoog GS y J Guarro. 1995. Atlas of clinical fungi. 1ª Ed. Centraalbureau voor Schimmelcultures y Universitat Rovira i Virgili. Baarn-Reus.

115. Horie Y. 1995. Productivity of ochratoxin A of *Aspergillus carbonarius* in *Aspergillus* section *Nigri*. Nippon Kingakukai Kaiho. 36: 73-76.

116. Huff WE, RD Wyatt y PB Hamilton. 1975. Nephrotoxicity of dietary ochratoxin A in broiler chickens. Appl. Microbiol. 30: 48-51.

117. Huff WE, JA Doerr y PB Hamilton. 1977. Decreased bone strength during ochratoxicosis and aflatoxicosis. Poult. Sci. 56: 1724.

118. Huff WE, JA Doerr y PB Hamilton. 1979. Decreased glycogen mobilisation during ochratoxicosis in broiler chickens. Appl. Environ. Microbiol. 37: 122-126.

119. Huff WE, JA Doerr, CJ Wabeck, GW Chaloupka, JD May y JW Merkley. 1983. Individual and combined effects of aflatoxin and ochratoxin A on bruising in broiler chickens. Poult. Sci. 62: 1764-1771.

120. Huff WE, JA Doerr, CJ Wabeck, GW Chaloupka, JD May y JW Merkley. 1983. Individual and combined effects of aflatoxin and ochratoxin A on various processing parameters of broiler chickens. Poult. Sci. 63: 2153-2161.

121. Hult K, A Teiling y S Gatenbeck. 1976. Degradation of ochratoxin A by a ruminant. Appl. Environ. Microbiol. 32: 443-444.

122. Hunt DC, BR McConnie y NT Crosby. 1980. Confirmation of ochratoxin A by chemical derivatisation and high-performance liquid chromatography. Analyst. 105: 89-90.

123. Ito MF, LMA Bacchi, AC Maringoni y JOM Menten. 1992. Comparação de métodos para detecção de *Aspergillus spp.* e *Penicillium spp.* em sementes de amendoim (*Arachis hypogaea*). Summa Phytopathologica. 18: 262-268.

124. Jayaraman P y I Kalyanasundaram. 1994. Changes in storage mycoflora of parboiled rice through different stages of processing. J. Food Sci. Tech. 31: 219-224.

125. Jiao Y, W Blaas, C Rühl y R Weber. 1994. Ochratoxin A in Lebbensmitteln pflanszicher herkunft. Deutsch. Lebbensmitt. Rundsch. 90: 318-321.

126. Jiménez AM, A López de Cerain, E González Peñas, J Bello, AM Betbeder y EE Creppy. 1998. Exposure to ochratoxin A in Europe: comparison with a region of northern Spain. J. Toxicol.-Toxin Reviews. 17: 479-491.

127. Jiménez M, R Mateo, A Querol, T Huerta y E Hernández. 1991. Mycotoxins and mycotoxigenic moulds in nuts and sunflower seeds for human consumption. Mycopathologia. 115: 121-127.

128. Jonsyn FE. 1996. The intake of aflatoxins and ochratoxin by infants in Sierra Leone. En: Abstracts of the Ninth International IUPAC Symposium on Mycotoxins and Phycotoxins. Roma, 27-31 Mayo 1996. P: 209.

129. Jonsyn FE, SM Maxwell y RG Hendrickse. 1995. Ochratoxin A and aflatoxins in breast milk samples from Sierra Leone. Mycopathologia. 131: 121-126.

130. Jorgensen K. 1998. Survey of pork, poultry, coffee, beer and pulses for ochratoxin A. Food Addit. Contam. 15: 550-554.

131. Kane J y Fischer JB. 1975. The effect of sodium chloride on the growth and morphology of dermatophytes and some other keratolytic fungi. Can. J. Microbiol. 21: 742-749.

132. Kane J y RC Summerbell. 1987. Sodium chloride as an aid in identification of *Phaeoannellomyces werneckii* and other medically important dematiaceous fungi. J. Clin. Microbiol. 25: 944-946.

133. Kanisawa M. 1984. Synergistic effect of citrinin on hepatorenal carcinogenesis of ochratoxin A in mice. En: Toxigenic Fungi. Their toxins and health hazard. Ed: Kurata H y Y Ueno. Elsevier. Amsterdam. Pp: 245-254.

134. Kevei F, Z Hamari, J Varga, Z Kozakiewicz y J.H. Croft. 1996. Molecular polymorphism and phenotypic variation in *Aspergillus carbonarius*. Antonie van Leeuwenhoek. 70: 59-66.

135. Kevei F, B Tóth, A Coenen, Z Hamari, J Varga y JH Croft. 1997. Recombination of mitochondrial DNAs following transmission of mitochondria among incompatible strains of black *Aspergilli*. Mol. Gen. Genet. 254: 379-388.

136. Kiesling KH, H Pettersson, K Sandholm y M Olsen. 1984. Metabolism of aflatoxin, ochratoxin, zearalenone and three trichothecenes by intact rumen fluid, rumen protozoa, and rumen bacteria. Appl. Environ. Microbiol. 47:1070.

137. Kitchen DN, WW Carlton y J Tuite. 1977. Ochratoxin A and citrinin induced nephrosis in Beagle dogs II. Pathology. Vet. Pathol. 14: 261-272.

138. Klich MA y EJ Mullaney. 1987. DNA restriction enzime fragment polymorphism as a tool for rapid differentiation of *A. flavus* from *A. oryzae*. Experimental Mycol. 11: 170-175.

139. Klich MA y JI Pitt. 1988. A laboratory guide to common *Aspergillus* species and their teleomorphs. CSIRO Division of Food Processing. North Ryde.

140. Klich MA y JI Pitt. 1988. Differentiation of *Aspergillus flavus* from *A. parasiticus* and other closely related species. Trans. Br. Mycol. Soc. 91: 99-108.

141. Klich MA y RA Samson. 1996. *Aspergillus* reference cultures. International Union of Microbiological Societies.

142. Kozakiewicz Z. *Aspergillus* species on stored products. 1989. Mycol. Pap. 161.

143. Kozakiewicz Z, JC Frisvad, DL Hawksworth, JI Pitt, RA Samson y AC Stolk. 1992. Proposals for nomina specifica conservanda and rejicienda in *Aspergillus* and *Penicillium* (Fungi). Taxon. 41: 109-113.

144. Kozlowski M y PP Stepien. 1982. Restriction enzyme analysis of mitochondrial DNA of members of the genus *Aspergillus* as an aid in taxonomy. J. Gen. Microbiol. 128: 471-476.

145. Krivobok S, F Seigle-Murundi, R Steiman y EE Creppy. 1995. Fungal flora and ochratoxin A production in various food and feed in France. System. Appl. Microbiol. 18: 455-459.

146. Krogh P. Porcine Nephropathy associated with Ochratoxin A. En: Mycotoxins and animal foods. 1991. Ed: Smith JE y RS Henderson. CRC Press. Boca Ratón. Pp: 627-645.

147. Krogh P, F Elling, C Friis, B Hald, AE Larsen, EB Lillehoj, A Madsen, HP Mortensen, F Rasmusssen y U Ravnskov. 1979. Porcine nephropathy induced by long term ingestion of ochratoxin A. Vet. Pathol. 16: 466-475.

148. Krogh P, B Hald y EJ Pedersen. 1973. Occurrence of ochratoxin A and citrinin in cereals associated with mycotoxic porcine nephropathy. Acta Path. Microbiol. Scand. B. 81: 689-695.

149. Krogh P, B Hald, R Plestina y S Ceovic. 1977. Balkan (endemic) nephropathy and foodborn Ochratoxin A: preliminary results of a survey of foodstuffs. Acta Path. Microbiol. Scand. B. 85: 238-240.

150. Kubena LF, RB Harvey, WE Huff, DE Corrier, TD Phillips y GE Rottinghaus. 1987. Influence of ochratoxin and T-2 toxin singly and in combination on broiler chickens. Poult. Sci. 67: 253-260.

151. Kubena LF, WE Huff, RB Harvey, DE Corrier, TD Phillips y CR Creger. 1988. Influence of ochratoxin and deoxynivalenol on growing broiler chicks. Poult Sci, 68: 867-872.

152. Kuiper Goodman T. 1996. Risk assessment of ochratoxin A: an update. Food Addit. Contam. 13 (Suppl.): 53-57.

153. Kuiper Goodman T y PM Scott. 1989. Risk assessment of the mycotoxin ochratoxin A. Biom. Environm. Sci. 2: 179-248.

154. Kuriashi H, M Itoh, N Tsuzaki, Y Katayama, T Yokoyama y J Sugiyama. 1990. Ubiquinone system as a taxonomic tool in *Aspergillus* and its teleomorphs. En: Modern Concepts in *Penicillium* and *Aspergillus* Classification. Ed: Samson RA y JI Pitt. Plenum Press. NY. Pp: 407-420.

155. Kurtzman CP, BW Horn y CW Hesseltine. 1987. *Aspergillus nomius*, a new aflatoxin-producing species related to *Aspergillus flavus* and *Aspergillus tamarii*. Antoine van Leeuwenhoek. 53: 147-158.

156. Kurtzman CP, MJ Smiley, CJ Robnett y DT Wicklow. 1986. DNA relatedness among wild and domesticated species in the *Aspergillus flavus* group. Mycologia. 78: 955-959.

157. Kusters van Someren MA, HCM Kester, RA Samson y J Visser. 1990. Variation in pectinolytic enzymes in black Aspergilli: A biochemical and genetic approach. En: Modern Concepts in *Penicillium* and *Aspergillus* Classification. Ed: Samson RA y JI Pitt. Plenum Press. NY. Pp: 321-334

158. Kusters van Someren MA, RA Samson y J Visser. 1991. The use of RFLP analysis in classification of the black Aspergilli: reinterpretation of the *Aspergillus niger* aggregate. Curr. Genet. 19: 21-26.

159. Kuthubutheen AJ 1982. Thermophilous fungi from Malaysia. Trans. Br. Mycol. Soc. 79: 548-552.

160. Kwon Chung KJ y JE Bennet. 1992. Medical mycology. Lea & Febiger. Philadelphia.

161. Lacey J y N Magan. 1991. Fungi in cereal grains, their occurrence and water and temperature relationships. En: Cereal grain, Mycotoxins, Fungi and quality in Drying and Storage. Developments in Food Science. Vol. 26. Ed: Chelkowski J. Elsevier. Amsterdam. Pp: 77-118.

162. Langseth W, U Nimoen y B Bergsjo. 1993. Ochratoxin A in plasma of Norwegian swine determined by an HPLC extraction column-switching method. Natural Toxins. 216-221.

163. Latgé JP. 1999. *Aspergillus fumigatus* and aspergillosis. Clin. Microbiol. Rev. 12: 310-350.

164. Legarda TM y PA Burdaspal. 1998. Ocratoxina A en cervezas elaboradas en España y otros países europeos. Alimentaria. 291: 115-122.

165. Lenette EH, A Balows, WJ Hausler y JP Truant. 1980. Manual of clinical microbiology. 3ª Ed. American Society for Microbiology. Washington.

166. Little CJL, PE McNeil y J Robb. 1991. Hepatopathy and dermatitis in a dog associated with the ingestion of mycotoxins. J. Small Anim. Prac. 32: 23-26.

167. Lovett, J, JW Messer y RB Read. 1971. The microflora of southern Idaho poultry litter. Poult. Sci. 50: 746-751.

168. Lurá, MCE, AM González, AJ Beccaria, MG Latorre, AF Nepote y M Rico. 1994. Aislamiento, identificación y determinación de la capacidad toxigénica de hongos contaminantes de cereales y productos alimenticios. Boletín Micológico. 9: 103-108.

169. Maaroufi A, A Achour, F Zakhama, M Ellouz, M El May, EE Creppy y H Bacha. 1996. Human nephropathy related to ochratoxin A in Tunisia. J. Toxicol. Toxin. Reviews. 15: 223-237.

170. Macgeorge KM y PG Mantle. 1990. Nephrotoxicity of *Penicillium aurantiogriseum* and *P. commune* from an endemic nephropathy area of Yugoslavia. Mycopathologia. 12: 139-145.

171. Magnoli C, AM Dalcero, SM Chiacchiera, R Miazzo y MA Saenz. 1998. Enumeration and identification of *Aspergillus* group and *Penicillium* species in poultry feeds from Argentina. Mycopathologia. 142: 27-32.

172. Malir F, Z Jergeova, J Severa, M Cerna, J Smid, AM Betbeider, I Baudrimont, EE Creppy. 1998. The level of Ochratoxin A in blood serum of adults in the Czech republic. Revue Méd. Vét. 149: 710.

173. Mantle PG, KM McHugh, R Adatia, JM Heaton, T Gray y DR Turner. 1991. *Penicillium aurantiogriseum*-induced persistent renal histopathological changes in rats; an experimental model for Balkan Endemic Nephropathy competitive with ochratoxin A. En: Mycotoxins, endemic nephropathy and urinary tract tumours. Ed: Castegnaro M, R Plestina, G Dirheimer, IN Chernozemsky y H Bartsch. IARC. Lyon. Pp: 119-127.

174. Mantle PG, KM McHugh, R Adatia, JM Heaton, T Gray y DR Turner. 1991. Persistent karyomegaly caused by *Penicillium* nephrotoxins in the rat. Proc. R. Soc. Lond. B. 246: 251-259.

175. Mantle PG y KM McHugh. 1993. Nephrotoxic fungi in foods from nephropathy households in Bulgaria. Mycol. Res. 97: 205-212.

176. Marín S, V Sanchis, R Sáenz, AJ Ramos, I Viñas y N Magan. 1998. Ecological determinants for germination and growth of some *Aspergillus* and *Penicillium spp.* from maize grain. J. Appl. Microbiol. 84: 25-36.

177. Marquardt RR y AA Frohlich. 1992. A review of recent advances in understanding ochratoxicosis. J. Anim. Sci. 70: 3968-3988.

178. Mégnégnenau B, F Debets, y RF Hoekstra. 1993. Genetic variability and relatedness in the complex group of black Aspergilli based on random amplification of polymorphic DNA. Curr. Genet. 23: 323-329.

179. van der Merwe KJ, PS Steyn, L Fourie, DB Scott y JJ Theron. 1965. Ochratoxin A, a toxic metabolite produced by *Aspergillus ochraceus* Wilh. Nature 205: 1112-1113.

180. Micco C, M Miraglia, C Brera, S Corneli y A Ambruzzi. 1995. Evaluation of ochratoxin A level in human milk in Italy. Food. Addit. Contam. 12: 351-354.

181. Minter DW, DL Hawksworth, AHS Onions y Z Kozakiewicz. 1985. Descriptive terminology of the conidiogenous structures in *Aspergillus* and *Penicillium*. En Advances in *Penicillium* and *Aspergillus* systematics. Ed: Samson RA y JI Pitt. Plenum Press. NY. Pp: 71-82.

182. Mislivec PV, CT Dieter y VB Bruce. 1975. Mycotoxin producing potential of mold flora of dried beans. Appl. Microbiol. 29: 522-526.

183. Mitchell JI, PJ Roberts y ST Moss. 1995. Sequence or structure?. A short review on the application of nucleic acid sequence information to fungal taxonomy. Mycologist. 9: 67-75.

184. Moody SF y BM Tyler. 1990. Restriction enzyme analysis of mitDNA of the *A. flavus* group: *A: flavus*, *A. parasiticus* and *A. nomius*. Appl. Environ. Microbiol. 56: 2441-2452.

185. Moody SF y BM Tyler. 1990. Use of nuclear DNA restriction fragment length polymorphisms to analyze the diversity of the *A. flavus* group: *A: flavus*, *A. parasiticus* and *A. nomius*. Appl. Environ. Microbiol. 56: 2453-2461.

186. More HG, BC Stenning y N Magan. 1992. Effect of high temperature treatment on desinfestation and quality characteristics of sorghum. Ann. Appl. Biol. 120: 161-171.

187. Moreau C. 1979. Moisissures des tourteaux de soja. Évolution de la mycoflore au cors du stockage. Oléagineaux. 34: 29-32.

188. Moubasher AH, SII Abdel Hafez, HM Abdel Fattah y AM Moharram. 1984. Fungi of wheat and broad-bean straw composts II. Thermophilic fungi. Mycopathologia. 84: 65-71.

189. Murakami H. 1979. Classification system of the black Aspergilli. Taxonomic studies on japanese industrial strains of the *Aspergillus* (part 32). J. Brew. Soc. Japan. 74: 849-853.

190. Murakami H. 1979. Summary and description of species of black Aspergilli. Taxonomic studies on Japanese industrial strains of the *Aspergillus* (part 33). J. Brew. Soc. Japan. 74: 854-858.

191. Nakajima M, H Tsobouchi, M Miyabe y Y Ueno. 1997. Survey of aflatoxin B_1 and ochratoxin A in commercial green coffee beans by high-performance liquid chromatograpphy linked with immunoaffinity chromatography. Food Agric. Immunol. 9: 77-83.

192. Nakajima M, H Tsobouchi y M Miyabe. 1999. A survey of ochratoxin A and aflatoxins in domestic and imported beers in Japan by immunoaffinity and liquid chromatography. J. AOAC Int. 82: 897-902.

193. Neal GE. 1998. Participation of animal biotransformation in mycotoxin toxicity. Revue Méd. Vét. 149: 555-560.

194. Neishem S, ME Stack, MW Trucksess, RM Eppley y P Krogh. 1992. Rapid solvent-efficient method for liquid chromatographic determination of ochratoxin A in corn, barley an kidney: collaborative study. J. Assoc. Off. Anal. Chem. 75: 481-487.

195. Nicácio MAS, G Prado, VR Linardi. 1995. Determinaçâo de aflatoxina e identificaçâo da microbiota fúngica em milho (*Zea mays* L.) pós-colheita. Arq. Biol. Tecnol. 38: 851-857.

196. Notermans SHW, MA Cousin, GA de Ruiter y FM Rombouts. 1998. Fungal immunotaxonomy. En: Chemical Fungal Taxonomy. Ed: Frisvad JC, PD Bridge y DK Arora. Marcel Dekker. NY. Pp:121-152.

197. Núñez F, MM Rodríguez, ME Bermúdez, JJ Córdoba y MA Asensio. 1996. Composition and toxigenic potential of the mould population on dry-cured Iberian ham. Int. J. Food Microbiol. 32: 185-197.

198. O'Connell MJ, CEA Dowzer y JM Kelly. 1990. The ribosomal repeat of *Aspergillus niger* and its effects on transformation frequency. Fungal Genet. Newslett. 37: 29-30.

199. Ogundero VW y BA Oso. 1980. Thermal resistance and viability of asexual spores of thermophilic fungi from composts. Zeitshrift für Allgemeine Mikrobiologie. 20: 513-516.

200. Ono H, A Kataoka, M Koakutsu, K Tanaka, S Kawasugi, M Wakazawa Y. Ueno y M Manabe. 1995. Ochratoxin A productibility by strains of *Aspergillus niger* group stored in IFO culture collection. Mycotoxins. 41: 47-51.

201. Osborne DJ, WE Huff, PB Hamilton y HR Burmeister. 1981. Comparison of ochratoxin, aflatoxin, and T-2 toxin for their effects on selected parameters related to digestion and evidence for specific metabolism of carotenoids in chickens. Poult. Sci. 61: 1646-1652.

202. Oswald IP y C Coméra. 1998. Immunotoxicity of mycotoxins. Revue Méd. Vet. 149: 585-590.

203. Osweiler GD. 1992. Mycotoxins. En: Diseases of swine. 7ª Ed. Ed: Leman AD, BE Shaw, WL Mengeeeling, S d'Allaire y DJ Taylor. Iowa State University Press. Ames. Pp: 735-743.

204. Otusanya MO y MJ Jeger. 1996. Effect of *Aspergillus niger* on shoot emergence and vine development in field-sown yams (*Dioscorea* spp.) and rot development under long term storage conditions. Int. Biodeterioration & Biodegradation. 89-100.

205. Panasenko VT. 1967. Ecology of microfungi. Bot. Review. 33: 189-215.

206. Parenicová L, JAE Benen, RA Samson y J Visser. 1997. Evaluation of RFLP analysis of the classification of the selected black *Aspergilli*. Mycol. Res. 101: 810-814.

207. Parent Massin D y RE Parchment. 1998. Haematotoxicity of mycotoxins. Revue Méd. Vét. 149: 591-598.

208. Park JC, H Matsuoka, K Takatori y H Kurata. 1996. Adaptation of *Aspergillus niger* to acidic conditions and its relationship to salt stress and miconazole. Mycol. Res. 100: 869-874.

209. Patel S, CM Hazel, AGM Wintertorn y AE Gleadle. Survey of ochratoxin A in UK retail coffees. Food Addit. Contam. 14: 217-222.

210. Paterson RRM y PD Bridge. 1994. Biochemical techniques for filamentous fungi. IMI Technical Handbooks nº1. CAB International. Wallingford.

211. Pavlovic M, R Plestina y P. Krogh. 1979. Ochratoxin A in contamination of feedstuffs in an area with balkan (endemic) nephropathy Acta Path. Microbiol. Scand. B. 87: 243-246.

212. Peckham JC, B Doupnik Jr y OH Jones Jr. 1971. Acute toxicity of ochratoxins A and B in chicks. Appl. Microbiol. 21: 492-494.

213. Peraica M, AM Domijan, R Fuchs, A Lucic y B Radic. 1999. The occurrence of ochratoxin A in blood in general population of Croatia. Toxicol. Lett. 110: 105-112.

214. Peraica M, B Radic, A Licic y M Pavlovic. 1999. Toxic effects of mycotoxins in humans. Bull. World Health Org. 77: 754-766.

215. Pitt JI 1987. *Penicillium viridicatum*, *Penicillium verrucosum* and production of ochratoxin A. Appl. Environ. Microbiol. 53: 266-269.

216. Pitt JI y AD Hocking. 1997. Fungi and food spoilage. Chapman and Hall. Londres.

217. Pitt JI, AD Hocking, K Bhudhasamai, BF Miscamble, KA Wheeler y P Tanboon Ek. 1993. The normal mycoflora of commodities from Thailand. 1. Nuts and oilseeds. Int. J. Food Microbiol. 20: 221-226.

218. Pitt JI, AD Hocking, K Bhudhasamai, BF Miscamble, KA Wheeler y P Tanboon Ek. 1994. The normal mycoflora of commodities from Thailand. 2. Beans, rice, small grains and other commodities. Int. J. Food Microbiol. 23: 35-53.

219. Pitt JI y RA Samson. 1993. Species names in current use in the *Trichocomaceae* (Fungi, *Eurotiales*). Regnum Vegetabile. 128: 13-57.

220. Pittet A. 1998. Natural occurrence of mycotoxins in foods and feeds – an updated review. Revue Méd. Vét. 149: 479-492.

221. Pittet A, D Tornare, A Huggett y R Viani. 1996. Liquid chromatographic determination of ochratoxin A in pure and adultered soluble coffee using an immunoaffinity column cleanup procedure. J. Agric. Food Chem. 44: 3564-3569.

222. Prior MG y CS Sisodia. 1978. Ochratoxicosis in white leghorn hens. Poult. Sci. 57: 619-623.

223. Prior MG, CS Sisodia y JB O'Neil. 1976. Acute oral ochratoxicosis in day-old white leghorns, turkeys and Japanese quail. Poult. Sci. 55: 786-790.

224. Radic B, R Fuchs, M Peraica y A Lucic. 1997. Ochratoxin A in human sera in the area with endemic nephropathy in Croatia. Toxicol. Lett. 91: 105-109.

225. Raisbeck MF, GE Rottinghaus y JD Kendall. 1991. Effects of naturally occurring mycotoxins on ruminants. En: Mycotoxins and animal foods. Ed: Smith JE y RS Henderson. CRC Press. Boca Ratón. Pp: 647-677.

226. Ranjan KS y AK Sinha. 1991. Occurrence of mycotoxigenic fungi and mycotoxins in animal feed from Bihar, India. J. Sci. Food Agric. 56: 39-47.

227. Raper KB y DI Fennell. 1965. The Genus *Aspergillus*. Williams & Wilkins. NY.

228. Reidarson TH, JH Harrell, MG Rinaldi y J McBain. 1998. Bronchoscopic and serologic diagnosis of *Aspergillus fumigatus* pulmonary infection in a bottlenose dolphin (*Tursiops truncatus*). J. Zoo Wildlife Med., 29: 451-455.

229. Richard JL. 1997. Fungal infections. Aspergillosis. En Diseases of poultry 10ª Ed. Ed: Calnek BW, HJ Barnes, CW Beard, LR McDougald y YM Saif. Mosby-Wolfe. Londres. Pp: 351-360.

230. Rinyu E, J Varga y L Ferenczy. 1995. Phenotypic and genotypic analysis of variability in Aspergillus fumigatus. J. Clin. Microbiol. 33: 2567-2575.

231. Ritchie D. 1957. Salinity optima for marine fungi affected by temperature. Amer. J. Bot. 44: 870-874.

232. Rosner H. 1998. Mycotoxin regulations: an update. Revue Méd. Vét., 149: 679-680.

233. Rotem J y HJ Aust. 1991. The effect of ultraviolet and solar radiation and temperature on survival of fungal propagules. J. Phytopathology 76-83.

234. Royal Botanic Garden Edinburgh. 1969. Flora of British fungi. Colour identification chart. Her Majesty's Stationery Office. Edinburgh.

235. Rutqvist L, NE Björklund, K Hult, E Hökby y B Carlsson. 1978. Ochratoxin A as the cause of spontaneous nephropathy in fattening pigs. Appl. Environ. Microbiol. 36: 920-925.

236. Samarajeewa U. 1991. *In situ* degradation of mycotoxins by physical methods. En: Mycotoxins and animal foods. Ed: Smith JE y RS Henderson. CRC Press. Boca Ratón. Pp: 785-796

237. Sambrook J, EF Fritsch y T Maniatis. 1989. Molecular cloning: a laboratory manual. 2ª Ed. Cold Spring Harbor Laboratory Press. NY.

238. Samson RA. 1979. A compilation of the Aspergilli described since 1965. Studies in Mycology, 18. CBS publishers. Baarn.

239. Samson RA. 1994. Current Systematics of the Genus *Aspergillus*. En: The genus *Aspergillus*. Ed: KA Powell, A Renwick y JF Peberdy. Plenum Press. NY. Pp: 261-276.

240. Samson RA y W Gams. 1985. Typification of the species of *Aspergillus* and associated teleomorphs. En: Advances in *Penicillium* and *Aspergillus* systematics. Ed: Samson RA y JI Pitt. Plenum Press. NY. Pp: 31-54.

241. Samson RA, ES Hoekstra, JC Frisvad y O Filtenborg. 1996. Introduction to food-borne fungi. 5ª Ed. CBS. Baarn.

242. Sanchis V, N Sala, A Palomes, P Santamaría y PA Burdaspal. 1986. Occurrence of aflatoxin and aflatoxigenic molds in foods and feeds in Spain. J. Food Prot. 49: 445-448.

243. Sanchis V, A Sanclemente, J Usall y I Viñas. 1993.Incidence of mycotoxigenic *Alternaria alternata* and *Aspergillus flavus* in barley. J. Food Prot. 56: 246-248.

244. Sanchis V, PM Scott y JM Farber. 1988. Mycotoxin-producing potential of fungi isolated from red kidney beans. Mycopathologia. 104: 157-162.

245. Sanchis V, I Viñas, M Jiménez, MA Calvo y E Hernández. 1982. Mycotoxin-producing fungi isolated from bin-stored corn. Mycopathologia.80: 89-93.

246. Sandhu BS, H Singh y B Singh. 1995. Pathological studies in broiler chicks fed aflatoxin or ochratoxin and inoculated with inclusion body hepatitis virus singly and in concurrence. Vet Res Com, 19: 27-37.

247. Saubois A y MC Nepote. Aflatoxins in mixed feeds for rabbits. 1994. Boletín Micológico. 9: 115-120.

248. Schaeffer JL, JK Tyczkowski y PB Hamilton. 1987. Alterations in carotenoid metabolism during ochratoxicosis in young broiler chickens. Poult Sci. 66: 318-324.

249. Schlatter CH, J Studer Rohr y TH Rasonyi. Carcinogenicity and kinetic aspects of ochratoxin A. 1996. Food Addit. Contam. 13 (Supl.): 43-44.

250. Schönborn C. 1976. Über die Kochsalz-Toleranz von Hefepilzen der menschlichen Mikroflora. Derm. Mschr. 162: 564-570.

251. Schönborn C. 1981. NaCl-Toleranz bei Aspergillen und Dermatophyten der menschlichen Mikroflora. Mikosen. 24: 752-760.

252. Scott PM. 1984. Effects of food processing on mycotoxins. J. Food Prot. 47: 488-499.

253. Scott PM. 1991. Possibilities of reduction or elimination of mycotoxins present in cereal grains. En: Cereal grain. Mycotoxins, fungi and queality in drying and storage. Ed: Chelkowski J. Elsevier. Amsterdam. Pp: 529-572.

254. Scott PM. 1993. Gas chromatography of mycotoxins. En: Chromatography of mycotoxins. Techniques and applications. Ed: Betina V. Elsevier. Amsterdam. Pp: 373-414.

255. Scott PM. 1998. Industrial and farm detoxification processes for mycotoxins. Revué Méd. Vét. 149: 543-548.

256. Scott PM, SR Kanhere, R Canela, GA Lombaert y S Bacler. 1991. Determination of ochratoxin A. in meat by liquid chromatography. Prehrambeno-technol. Biotechnol. Rev./Food Technol. Biotechnol. Rev. 29: 61-64.

257. Scott PM, SR Kanhere, BPY Lau, DA Lewis, S Hayward, JJ Ryan, T Kuiper Goodman. 1998. Survey of canadian human blood plasma for ochratoxin A. Food Addit. Contam. 15: 555-562.

258. Scott PM, JW Lawrence y W van Walbeek. 1970. Detection of mycotoxins by thin-layer chromatography: application to screening of fungal extracts. Appl. Microbiol. 20: 839-842.

259. Scudamore, KA, MT Hetmanski, S. Nawaz, J Naylor y S Rainbird. 1997. Determination of mycotoxins in pet foods sold for domestic pets and wild birds using linked-column immunoassay clean-up and HPLC. Food Addit. Cont. 14: 175-186.

260. Scudamore KA y SJ MacDonald. 1998. A collaborative study of an HPLC method for determination of ochratoxin A in wheat using immunoaffinity column clean-up. Food Addit. Contam. 15: 401-410.

261. Scudamore KA, S Nawaz y MT Hetmanski. 1998. Mycotoxins in ingredients of animal feeding stuffs: II. Determination of mycotoxins in maize and maize products. Food Addit. Contam. 15: 30-55.

262. Sharman M, S MacDonald y J Gilbert. 1992. Automated liquid chromatographic determination of ochratoxin A in cereals and animal products using immunoaffinity column clean-up. J. Chromatogr. 603: 285-289.

263. Sharp NJH y MJ Day. 1998. Aspergillosis and Penicilliosis. En: Infections diseases of the dog and the cat. 2ª Ed. Ed: Greene CE. WB Saunders. Philadelphia. Pp: 404-413.

264. Shlosberg A, N Elkin, M Malkinson, U Orgad, V Hanji, E Bovin, Y. Weisman, M. Meroz y R. Bock. 1997. Severe hepathopathy in geese and broilers associated with ochratoxin in their feed. Mycopathologia. 138: 71-76.

265. Shreeve BJ, DSP Patterson, GA Pepin, BA Roberts y AE Wrathall. 1977. Effect of feeding ochratoxin to pigs during early pregnancy. Brit. Vet. J. 133: 412-417.

266. Simon P. 1996. Ochratoxin and kidney disease in the human. J. Toxicol-Toxin reviews. 15: 239-249.

267. Sinclair PJ y DB Letham. 1986. Incidence and sites of visible infection of *Aspergillus niger* on bulbs of two onion (*Allium cepa*) cultivars. Aust. Plant. Pathol. 25: 8-11.

268. Singh H, B Singh, KS Roy y B Singh. 1994. Histochemical/histoenzymic studies in broiler chicks fed aflatoxin, ochratoxin and inoculated with inclusion body hepatitis virus singly and in concurrence. Mycopathologia. 125: 119-128.

269. Skaug MA. 1999. Analysis of Norwegian milk and infant formulas for ochratoxin A. Food Addit. Contam. 16: 75-78.

270. Skrinjar M, RD Stubblefield, IF Vujicic y E Stojanovic. 1992. Distribution of aflatoxin-producing moulds and aflatoxins in dairy cattle feed and raw milk. Acta Microbiologica Hungarica. 39: 175-179.

271. Smith JMB. 1988. Opportunistic mycoses of man and other animals. CAB International, Wallingford.

272. Smith GW, L Ives, I Nagelkerken y KB Ritchie. 1996. Caribbean sea fan mortalities. Nature 383: 487.

273. Smith GW, CD Harvel y K Kim. 1998. Response of sea fans to infections with *Aspegillus* sp. (Fungi). Rev. Biol. Trop. 46: 205-208.

274. Solti, L., F. Salamon, I. Barna Vetró, Á. Gyöngyösi, E. Szabó y A. Wölfling. 1997. Ochratoxin A content of human sera determined by a sensitive ELISA. J. Analytcal Toxicol. 21: 44-48.

275. Sreemannarayana, O., A.A. Fröhlich, T.G. Vitti, R.R. Marquardt y D. Abramson. 1988. Studies of the tolerance and disposition of ochratoxin A in young calves. J. Anim. Sci. 66:1703-1711.

276. Staugaard P, RA Samson y MI van der Horst. 1990. Variation in *Penicillium* and *Aspergillus* conidia in relation to preparatory techniques for scanning electron and light microscopy. En: Modern Concepts in *Penicillium* and *Aspergillus* Classification. Eds: RA Samson y JI Pitt. Plenum Press. NY. Pp:39-48.

277. Steiman R, P Guiraud, L Sage y F Seigle Murandi. 1994. New strains from Israel in the *Aspergillus niger* Group. System. Appl. Microbiol. 17: 620-624.

278. Steyn PS. 1984. Ochratoxins and related dihydroisocoumarins. En: Mycotoxins: production, isolation, separation and purification. Ed: Betina V. Elsevier. Amsterdam. Pp: 183-216.

279. Steyn PS, PG Thiel y DW Trinder. 1991. Detection and Quantification of Mycotoxins by Chemical Anallysis. En: Mycotoxins and animal foods. Ed: Smith JE y RS Henderson. CRC Press. Boca Ratón. Pp: 165-221.

280. Stoev SD. 1998. The role of ochratoxin A as a possible cause of balkan endemic nephropathy and its risk evaluation. Vet. Human Toxicol. 40: 352-360.

281. Stoev SD. 1998. Some metric, antidote and pathomorfological investigations in experimental intoxication with ochratoxin A and penicillic acid in chicks. Bulgarian J. Agric. Sci. 4: 551-563.

282. Stoev SD, B Hald y PG Mantle. 1998. Porcine nephropathy in Bulgaria: a progressive syndrome of complex or uncertain (mycotoxin) aetiology. Vet. Rec. 21:190-194.

283. Stoev SD, I Kunev y B Radic. 1997. Hematological, biochemical and toxicological investigations in spontaneous cases of mycotoxic nephropathy (ochratoxicosis) in pigs. Bulgarian J. Agric. Sci. 3: 507-516.

284. Stoev SD, JK Stoeva, G Anguelov, B Hald, EE Creppy y B. Radic. 1998 Hematological, biochemical and toxicological investigations in spontaneous cases with different frequency of porcine nephropathy in Bulgaria. J. Vet. Med. A. 45: 229-236.

285. Storen O, H Holm y FC Stormer. 1982. Metabolism of ochratoxin A by rats. Appl. Environ. Microbiol. 44: 785-789.

286. Subbarao KV, TJ Michailides y DP Morgan. 1993. Effects of osmotic potential and temperature on growth of two pathogens of figs and a biocontrol agent. Ecol. Epidemiol. 83: 1454-1459.

287. Subbarao KV y TJ Michailides. 1995. Effects of temperature on isolates of *Fusarium moniliforme* causing fig endosepsis and *Aspergillus niger* causing smut. Phytopathol. 85: 662-668.

288. Sugiyama J y T Yokoyama. 1990. Electrophoretic comparison of enzymes as a chemotaxonomic aid among *Aspergillus* taxa (1). *Aspergillus* Section *Ornati* and *Cremei*. En: Modern Concepts in *Penicillium* and *Aspergillus* Classification. Ed: RA Samson y JI Pitt. Plenum Press. NY. Pp: 385-394.

289. Swart K, AJM Debets, EF Holub, CJ Bos y RF Hoekstra. 1994. Physical Karyotyping: Genetic and taxonomic applications in Aspergilli. En: The genus Aspergillus. From taxonomy and genetics to industrial application. Ed: Powell KA, A Renwick y JF Peberdy. Plenum Press. NY. Pps: 233-240.

290. Szebiotko K, J Chelkowski, G Dopierela, B Godlewska y W Radomyska. 1981. Mycotoxins in cereal grain. Part 1. Ochratoxin, citrinin, sterigmatocystin, penicillic acid and toxigenic fungi in cereal grain. Nahrung. 25: 415-421.

291. Szczech GM, WW Carlton y J Tuite. 1973. Ochratoxicosis in Beagle dogs I. Pathology. Vet. Path. 10: 219-231.

292. Szczech GM, WW Carlton y J Tuite. 1973. Ochratoxicosis in Beagle dogs II. Clinical and clinicopathological features. Vet. Path. 10: 135-154.

293. Szczech GM, WW Carlton, J Tuite y R Caldwell. 1973. Ochratoxin A toxicosis in swine. Vet. Path. 10: 347-364.

294. Tápai K, J Téren y A Mesterházy. 1997. Ochratoxin A in the sera of blood donors and ill persons. Cereal Res. Comm. 25: 307-308.

295. Téren J, A Palágyi y J Varga. 1997. Isolation of ochratoxin producing Aspergilli from green coffee beans of different origin. Cereal Res. Comm. 25: 303-304.

296. Téren J, J Varga, Z Hamari, É Rinyu y F Kevei. 1996. Immunochemical detection of ochratoxin A in black *Aspergillus* strains. Mycopathologia. 134: 171-176.

297. Thompson JD, DG Higgins y TJ Gibson. 1994. Clustal W: Improving the sensivity of progressive multiple sequence alignment through sequence weighting, positions-specific gap penalties and weight matrix choice. Nucleic Acids Res. 22: 4673-4680.

298. Tresner HD y JA Hayes. 1971. Sodium chloride tolerance of terrestrial fungi. Appl. Microbiol. 22: 210-213.

299. Trojanowska K. 1991. Evaluation of cereal grain quality using mycological methods. En: Cereal grain, Mycotoxins, Fungi and quality in Drying and Storage. Developments in Food Science. Vol. 26. Chelkowski J. Elsevier. Amsterdam. Pp: 185-215.

300. Trucksess MW, J Giler, K Young, KD White y SW Page. 1999. Determination and survey of ochratoxin A in wheat, barley and cofee-1997. J. AOAC Int. 82: 85-89.

301. Tucker TL y PB Hamilton. 1971. The effect of ochratoxin in broilers. Poult. Sci. 50: 1637.

302. Ueno Y. 1991. Biochemical mode of action of mycotoxins. En: Mycotoxins and animal foods. Ed: Smith JE y RS Henderson. CRC Press. Boca Ratón. Pp: 437-453.

303. Ueno Y. 1998. Residue and risk of ochratoxin A in human plasma and beverages in Japan. Mycotoxins. 47: 25-32.

304. Ueno Y, O Kawamura, Y Sugiura, K Horiguchi, M Nakajima, K Yamamoto y S Sato. 1991. Use of monoclonal antibodies, enzyme-linked immunosorbent assay and immunoaffinity column chromatography to determine ochratoxin A in porcine sera, coffee products and toxin-producing fungi. IARC-Sci.-Publ. 115: 71-75.

305. Ueno Y, S Maki, J Lin, M Furuya, Y Sugiura y O Kawamura. 1998. A 4 year study of plasma in a selected population in Tokyo by immunoassay and immunoaffinity column-linked HPLC. Food Chem Toxicol. 36: 445-449.

306. Valenta H. 1998. Chromatographic methods for the determination of ochratoxin A in animal and human tissues and fluids. J. Chromatogr. A. 815: 75-92.

307. Valenta A y M Goll. 1996. Determination of ochratoxin A in regional samples of cow's milk from Germany. Food Addit. Contam. 13: 669-676.

308. Valenta H, I Kühn y K Rohr. 1993. Determination of ochratoxin A in urine and faeces of swine by high performance liquid chromatography. J Chromatograph. 613: 295-302.

309. Varga J, F Kevei, F Debets, Z Kozakiewicz y JH Croft. 1994. Mitochondrial DNA restriction fragment length polymorphisms in field isolates of the *Aspergillus niger* aggregate. Can. J. Microbiol. 40: 612-621.

310. Varga J, F Kevei, C Fekete, A Coenen, Z Kozakiewicz y JH Croft. 1993. Restriction fragment length polymorphisms in the mitochondrial DNAs of the *Aspergillus niger* aggregate. Mycol. Res. 97: 1207-1212.

311. Varga J, F Kevei, É Rinyu, J Téren y Z Kozakiewicz. 1996. Ochratoxin production by *Aspergillus* species. Appl. Environ. Microbiol. 62: 4461-4464.

312. Verweij PE, JFGM Meis, P van den Hurk, A Samson y WJG. Melchers. 1995. Phylogenetic relationships of five species of *Aspergillus* and related taxa as deduced by comparison of sequences of small subunit ribosomal RNA. J. Med. Vet. Mycol. 33: 185-190.

313. Visconti A y A Bottalico. 1983. High levels of ochratoxins A and B in miouldy bread responsible for mycotoxicosis in farm animals. J. Agric. Food Chem. 31: 1122-1123.

314. Visconti A, M Pascale y G Centonze. 1999. Determination of ochratoxin A in wine by means of immunoaffinity column clean-up and high-performance liquid chromatography. J. Chromatograph. A. 864: 89-101.

315. Visser J, M Suykerbuyk, M Kusters van Someren, RA Samson y P Schaap. 1996. Classification of black Aspergilli by RFLP analysis. En: Fungal identification techniques. Ed: Rossen L, V Rubio, MT Dawson, JC Frisvad. ECSC-EC-EAEC. Bruselas. Pp: 194-201.

316. Wafa EW, RS Yahya, MA Sobh, I Eraky, M El Baz, HAM El Gayar, AM Betbeder y EE Creppy. 1998. Human ochratoxicosis and nephropathy in Egypt: A preliminary study. Human Exp. Toxicol. 17: 124-129.

317. van Walbeek W, PM Scott, J Harwig y JW Lawrence. 1969. *Penicillium viridicatum* Westling: a new source of ochratoxin A. Can. J. Microbiol. 15: 1281-1285.

318. Wallace HAH y RN Sinha. 1975. Microflora of stored grain in international trade. Mycopthologia. 57: 171-176.

319. Warren MF y PB Hamilton. 1980. Intestinal fragility during ochratoxicosis and aflatoxicosis in broiler chickens in broiler chickens. Appl. Environ. Microbiol. 42: 641.

320. Warren MF y PB Hamilton. 1981. Glycogen storage disease type X caused by ochratoxin A in broiler chickens. Poult. Sci. 60: 120-123.

321. White TJ, T Bruns, S Lee y J Taylor. 1990. Amplification and direct sequencing of fungal ribosomal RNA genes for phylogenetics. En: PCR protocols. A guide to methods and applications. Ed: Innis MA, DK Gelfand, JJ Sninsky y TJ White. Academic Press. San Diego. Pp: 315-322.

322. Wicklow DT, PF Dowd, AA Alfatafta y JB Gloer. 1996. Ochratoxin A: an antiinsectan metabolite from the sclerotia of *Aspergillus carbonarius* NRRL 369. Can. J. Microbiol. 42: 1100-1103.

323. Wilson DM, EW Sydenham, GA Lombaert, MW Trucksess, D Abramson y GA Bennett. 1998. Mycotoxin Analytical Techniques. En: Mycotoxins in agriculture and food safety. Eds: Sinha KK y D Bhatnagar. Marcel Dekker. NY. Pp: 135-182.

324. Wyatt RD. 1991. Poultry. En: Mycotoxins and animal foods. Ed: Smith JE y RS Henderson. CRC Press. Boca Ratón. Pp: 553-605.

325. Yokoyama T, J Sugiyama y H Kuraishi. 1990. Electrophoretic comparison of enzymes as a chemotaxonomic aid among *Aspergillus* taxa (2). *Aspergillus* Section *Flavi*. En: Modern Concepts in *Penicillium* and *Aspergillus* Classification. Ed: RA Samson y JI Pitt. Plenum Press. NY. Pp: 395-406.

326. Yeulet SE, PG Mantle, MS Rudge y JB Greig. 1988. Nephrotoxicity of *Penicillium aurantiogriseum*, a possible factor in the aetiology of Balkan Endemic Nephropathy. Mycopathologia. 102: 21-30.

327. Young SJF, DG Huff y C Stephen. 1999. A Risk-management approach to a mycotic disease potential in captive Beluga whales (*Delphinapterus leucas*). Zoo Biol. 18: 5-16.

328. Yoshizawa T. 1991. Natural occurrence of mycotoxins in small grain cereals (wheat, barley, rye, oats, sorghum, millet, rice). En: Mycotoxins and animal foods. Ed: Smith JE y RS Henderson. CRC Press. Boca Ratón. Pp: 301-325.

329. Yuan GF, CS Liu y CC Chen. 1995. Differentiation of *Aspergillus parasiticus* from *Aspergillus sojae* by random amplification of polymorphic DNA. Appl. Environ. Microbiol. 61: 2384-2387.

330. Zimmerli B y R Dick. 1996. Ochratoxin A in table wine and grape-juice: occurrence and risk assessment. Food Addit. Contam. 13: 655-668.

ANEXOS

ANEXO I. Abreviaciones.

ATCC, American Type Culture Collection, Rockville, MD, EEUU.

BEN, Balkan Endemic Nephropathy (nefropatía endémica de los Balcanes).

CBS, Centraalbureau voor Schimmelcultures, Baarn, Holanda.

CMI, Concentración mínima inhibitoria.

CYA, Czapek Yeast extract Agar (agar Czapek extracto de levadura).

ETS, Externally Transcribed Spacer (espaciador transcrito externamente).

FAO, Food and Agricultural Organisation.

FDA, Food and Drug Admnistration.

GRAS, Generally Regarded As Safe.

IAC, Immunoaffinity Columns (columnas de inmunoafinidad).

HPLC, High Performance Liquid Chromatography (Cromatografía líquida de alta eficacia).

IARC, International Agency for Research on Cancer.

IGS, Inter-Genic Spacer (espaciador intergénico).

IMI, International Micological Institute, Egham, Reino Unido.

ITS, Internally Transcribed Spacer (espaciadores transcritos internamente).

LLP, Liquid – Liquid Partition (partción líquido – líquido).

MEA, 2% Malt Extract Agar (agar extracto de malta al 2%).

mtDNA, DNA mitocondrial.

NRRL, Northern Regional Research Laboratory, Peoria, IL, EEUU.

NTS, Non-Transcribed Spacer (espaciador no transcrito).

OA, Ocratoxina A.

PCR, Polimerase Chain Reaction (reacción en cadena de la polimerasa).

PDA, Potato Dextrose Agar (agar patata glucosado).

rDNA, DNA ribosomal.

RAPD, Random Amplified Polymorphic DNA (polimorfismos de DNA amplificado aleatoriamente).

RFLP, Restriction Fragment Length Polimorphism (polimorfismos de longitud de fragmentos de restricción).

SEM, Scanning Electron Microscope (microscopio electrónico de barrido).

SFW, Suero fisiológico con tween 80 al 0,05%.

SPE, Solid Phase Extraction (extracción de fase sólida).

TLC, Thin Layer Chromatography (cromatografía en capa fina).

UFC, Unidades formadoras de colonias.

YES, Yeast Extract Sucrose (extracto de levadura sacarosa).

ANEXO II. Colores.

En el presente anexo se relacionan los colores mencionados en el presente estudio con los números de referencia de la carta de identificación de colores del *Royal Botanic Garden Edinburgh* (1969).

A: amarillo	54
AC: amarillo claro	50
AG: amarillo grisáceo	55
B: blanco	1
BE: beige	4
C: caqui	64
CR: crema	2
G: gris	34
GN: gris negruzco	37
M: marrón	24
MC: marrón claro	17
MG: marrón grisáceo	33
MN: marrón negruzco	36
MO: marrón oscuro	16
MR: marrón rojizo	23
N: negro	38
NA: naranja	48
V: verde	62
VC: verde claro	68
VO: verde oscuro	65

ANEXO III. Láminas.

Lámina I.

Patrones de RFLP N y T obtenidos al digerir con *Rsa*I los fragmentos 5.8S ITS-rDNA amplificados mediante PCR. Patrón N: dos fragmentos de 519 y 76 pb. Patrón T: Un fragmento de 595 pb. Carrera L: marcador 100-bp DNA ladder (Gibco BRL); carreras 1-7: patrón N; carreras 8-13: patrón T. Carrera 1, CBS 554.65; carrera 2, CBS 126.49; carrera 3, NRRL 3122; carrera 4 ATCC 22343; carrera 5, CBS 618.78; carrera 6, IMI 211394; carrera 7, CBS 118.35; carrera 8, CBS 134.48; carrera 9, CBS 117.32; carrera 10, IMI 172296; carrera 11, IMI 63764; carrera 12, CBS 558.65; carrera 13, ATCC 26036. El fragmento de 76 pb es demasiado pequeño para observarse con claridad.

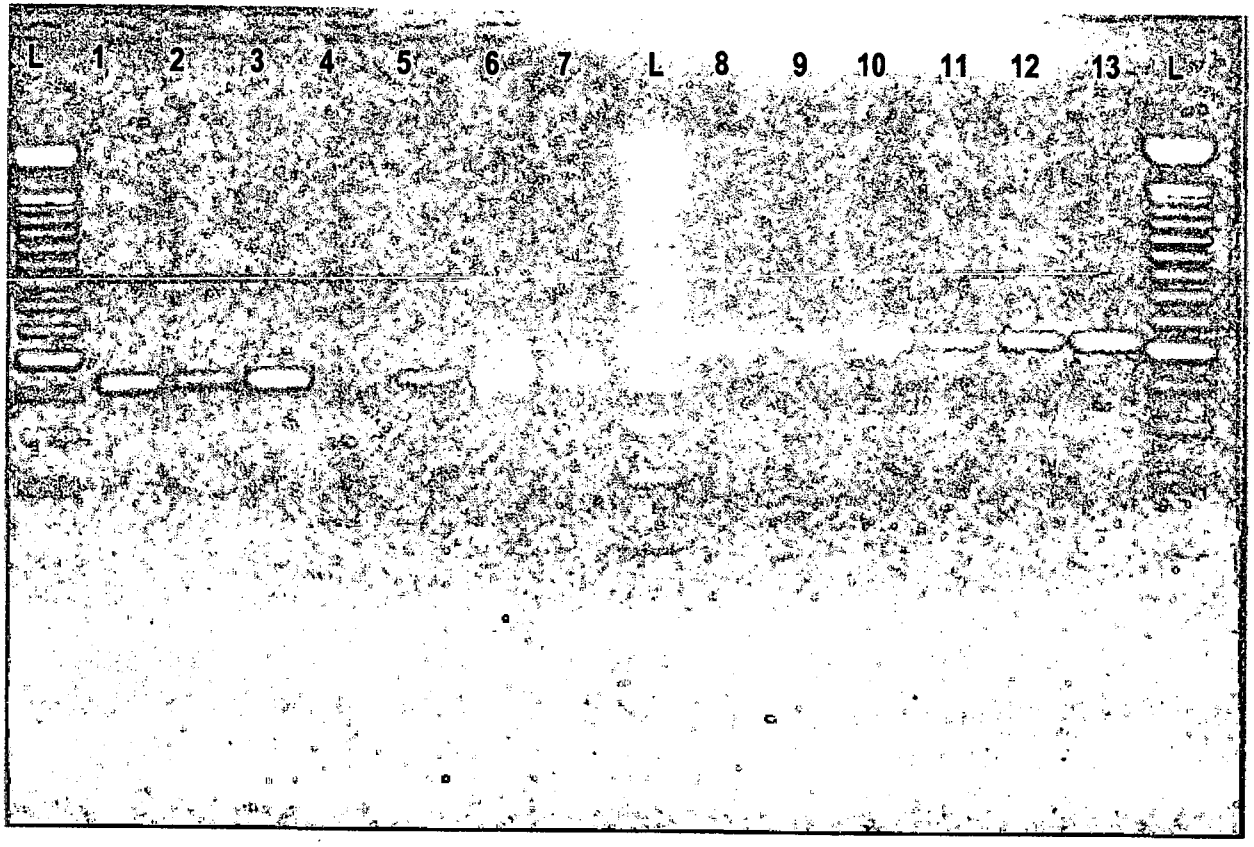

L
1
2
3
4
5
6
7
L
8
9
10
11
12
13
L

Lámina II.

Aspecto de las colonias de *Aspergillus niger* var. *niger* (A220) desarrolladas en MEA (A) y CYA (B) a los siete días de incubación a 25ºC.


A
B

Lámina III.

Aspecto de las colonias de *Aspergillus niger* var. *niger* (A220) desarrolladas en CYA (A) y CYA20S (B) a los siete días de incubación a 37ºC y a 25ºC, respectivamente.


A
B

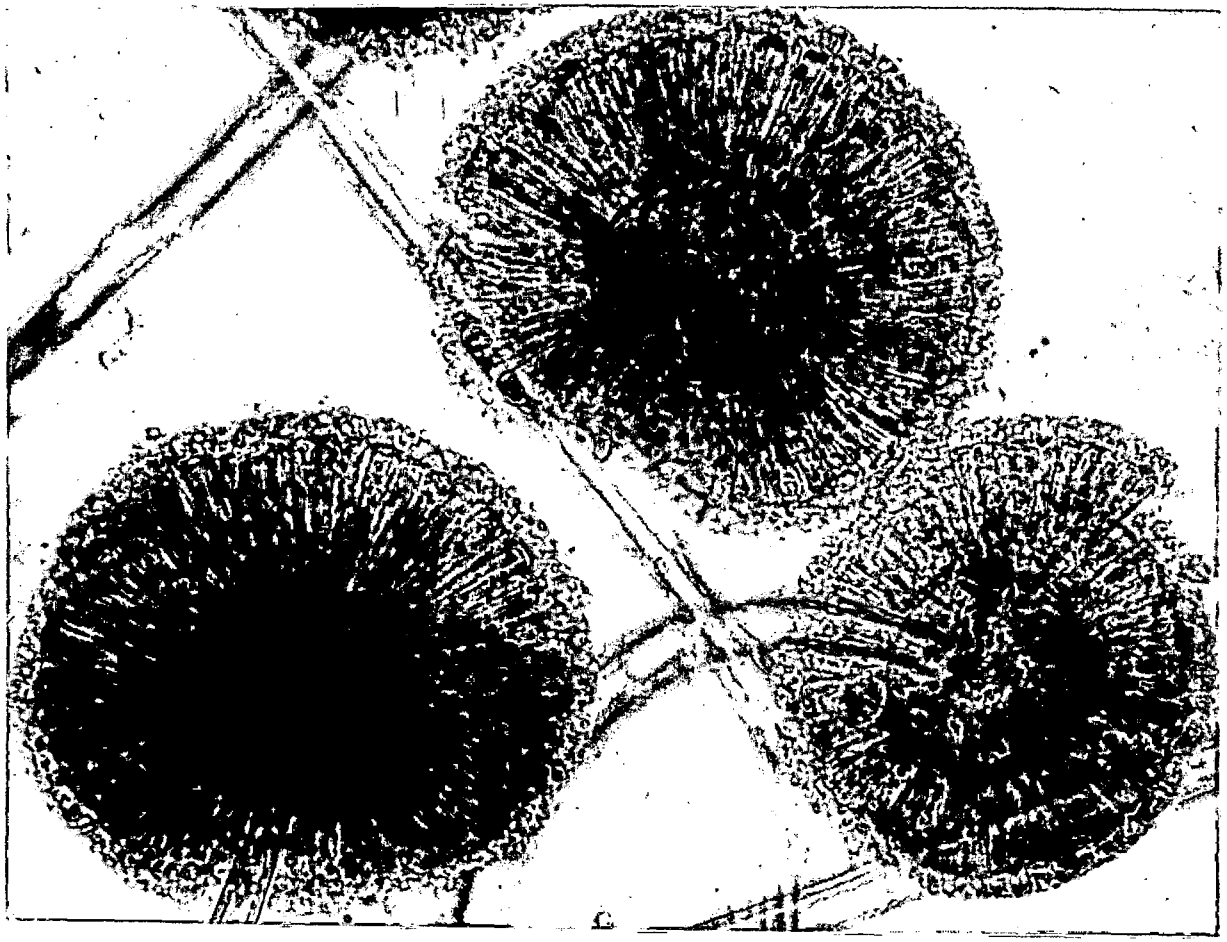
Lámina IV.

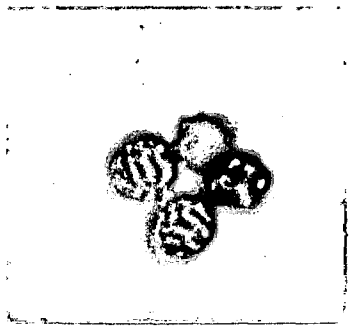
Aspecto de las cabezas conidiales de *A. niger* var. *niger* (A266).

Detalle de la ornamentación de los conidios:

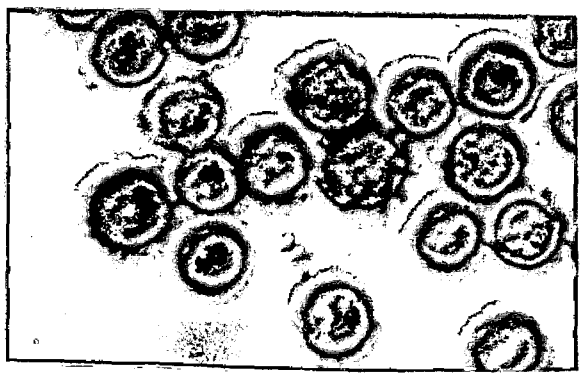
A: ornamentación formada por estrías longitudinales (A645).

B: ornamentación formada por protuberancias (IMI 211394).





A



B

Lámina V.

Crecimiento de *A. niger* var. *niger* (A81) a las temperaturas de 10ºC (A), 15ºC (B), 20ºC (C), 25ºC (D), 30ºC (E) y 35ºC (F).

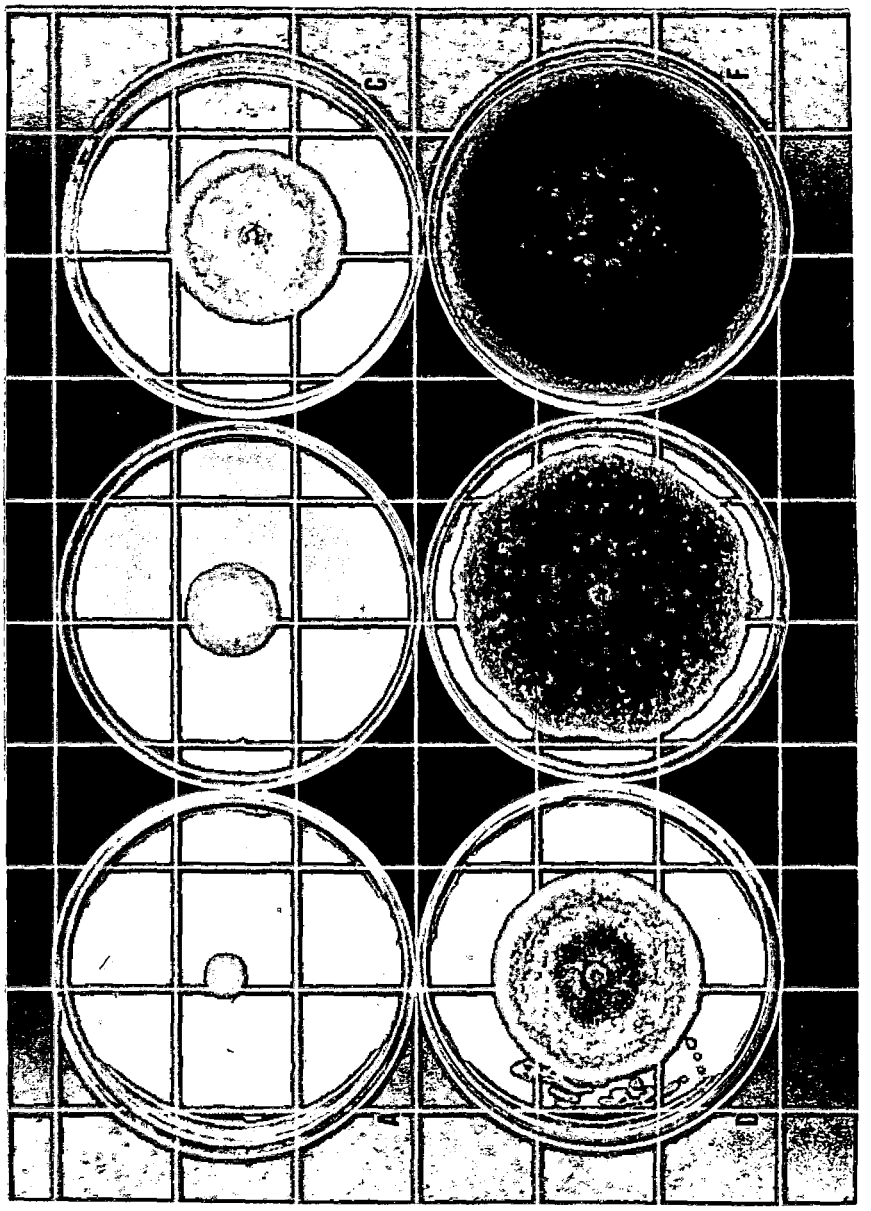

C
F
A
D

Lámina VI.

Crecimiento de *A. niger* var. *niger* (A656) a distintas concentraciones de NaCl: 0% (A), 2% (B), 4% (C), 6% (D), 8% (E) y 10% (F) a 35ºC.


A
B
C
D
E
F

Lámina VII.

Alteraciones morfológicas inducidas por elevadas concentraciones de NaCl:

A: heteromorfismo (A88).

B: presencia de hifas retorcidas (607JC).

A

B