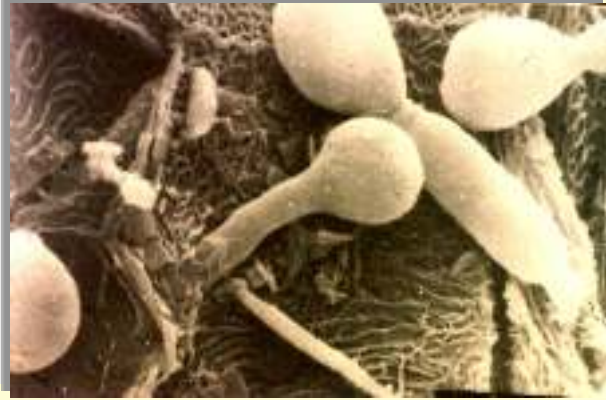


6. Türkiye EKMUD Kongresi 11-15 Mayıs 2016 Antalya KURS 3:
SİSTEMİK FUNGAL ENFEKSİYONLARDA
TANI ve TEDAVİ

Örnekten Rapora
KONVANSİYONEL TANI

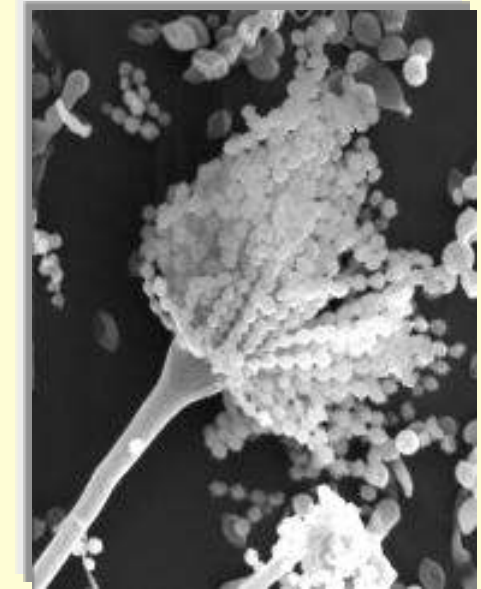
Prof. Dr. Sevtap Arıkan Akdağlı
Hacettepe Üniversitesi Tıp Fakültesi
Tıbbi Mikrobiyoloji AD

Fırsatçı İnvazif Mikozlar-Etkenler



• CANDIDA

• ASPERGILLUS



• DİĞER

Mucorales
C. neoformans
Fusarium
Scedosporium
Dematisiyöz
küfler.....



İnvazif mantar enfeksiyonları, çeşitli nedenlerden ötürü önem taşır



Olumsuz konak koşulları

Dirençli cins ve suşlar

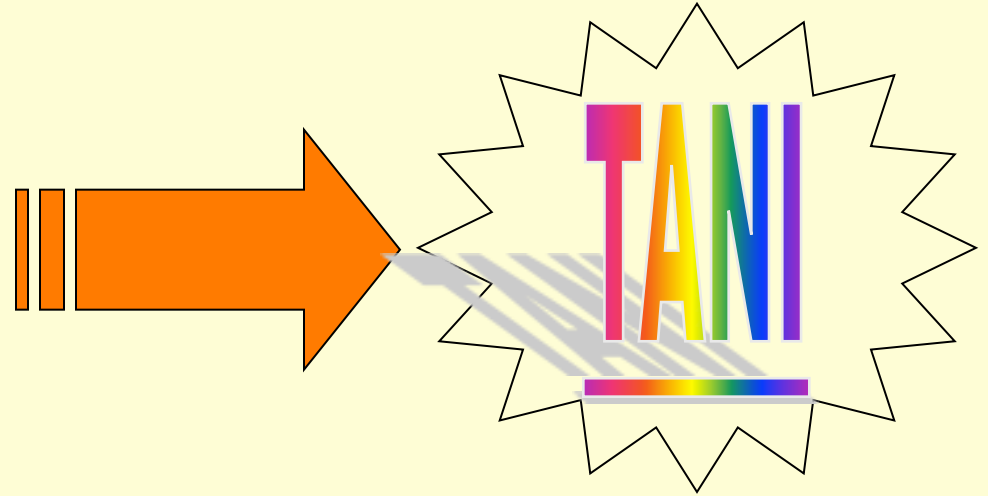
•Düşük klinik yanıt oranları
•Yüksek mortalite



Erken tanıda zorluklar

Antifungal tedaviye suboptimal yanıt

- Klinik
- Mikrobiyoloji
- Histopatoloji
- Radyoloji



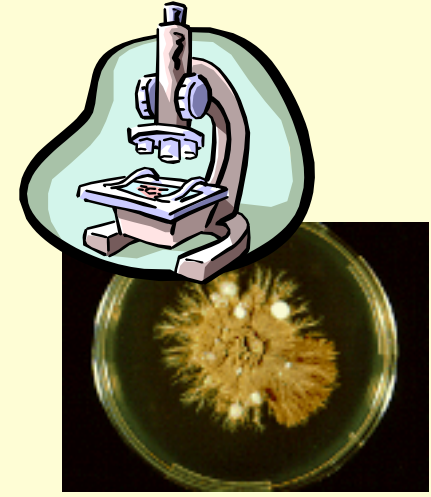
Uluslararası Kılavuzlar

CLSI M54-A
ECIL-3 - Klasik Tanı Kılavuzu
ECIL - Biyolojik Belirteçler Kılavuzu
ECIL 3- Mukormikoz Kılavuzu
ESCMID - <i>Candida</i> Tanı Kılavuzu
IDSA-ASM Kılavuzu
ESCMID-ECMM Feohifomikoz Kılavuzu
ESCMID-ECMM Hyalohifomikoz Kılavuzu
ESCMID-ECMM Mukormikoz Kılavuzu
ESCMID-ECMM Nadir Görülen İnvazif Maya Enfeksiyonları Kılavuzu

Mikrobiyolojik Tanı Yöntemleri

KONVANSİYONEL YÖNTEMLER

Direk mikroskopik inceleme
Kültür



DİĞER YÖNTEMLER

Serolojik yöntemler
Moleküler yöntemler



Örnek alma-Genel ilkeler

- Uygun ve yeterli örnek
- Hızlı transport, çabuk işlem
 - Klinik ön tanı

~~Kuruma~~

Alt solunum yolu örnekleri için kurallar (BAL, fırça, aspirasyon, balgam)

- Steril tüpte
- > 1 ml
- ≤ 2 saat: oda sıcaklığı
- ≤ 24 saat: +4°C'de
(Termal dimorfik mantarların dayanma süresi kısa)

Hatalar

- Kapalı olmayan tüp / transport kabı
- Kemik iliği aspirasyon örnekleri
 - Formol içinde doku
 - Kuru eküvyon

Direk mikroskopik inceleme

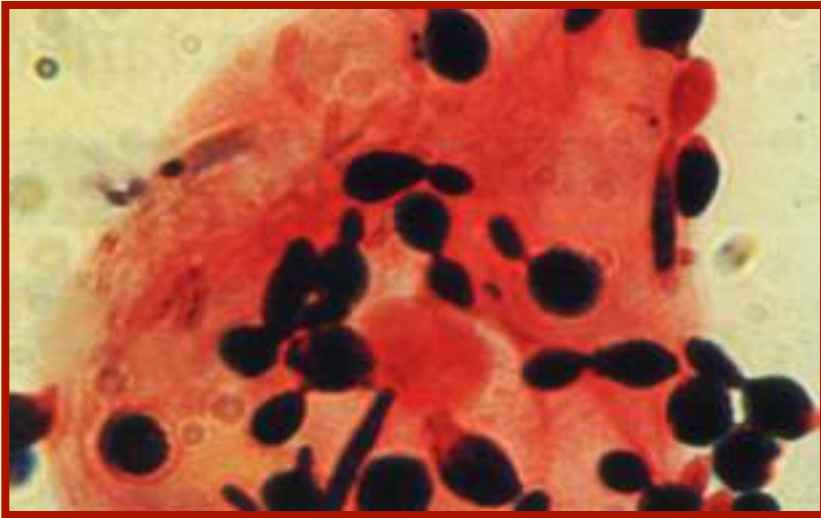
Olası hızlı tanı;

- Tanımlama, kesin tanı \emptyset
- Olası etken ile uyum
- Duyarlılık..

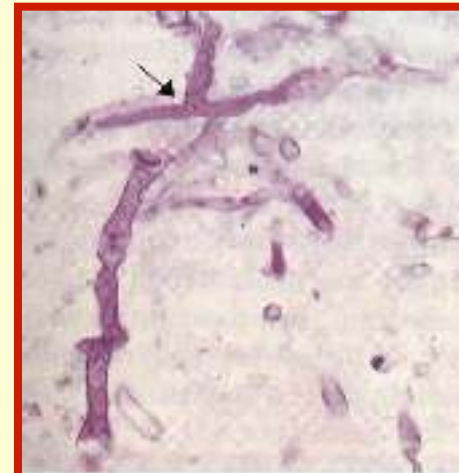
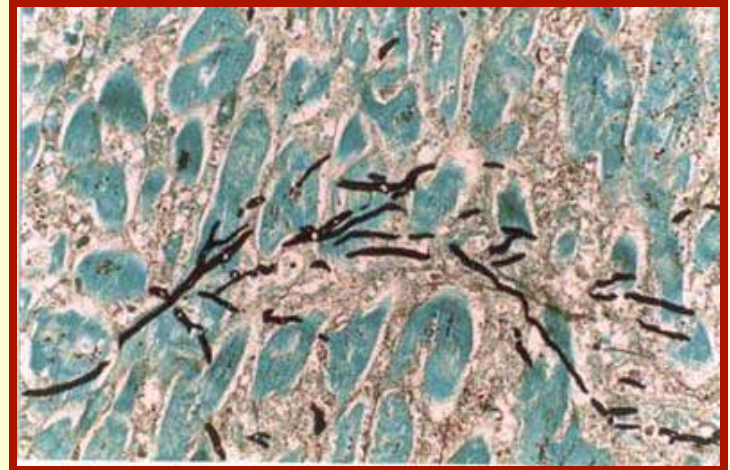
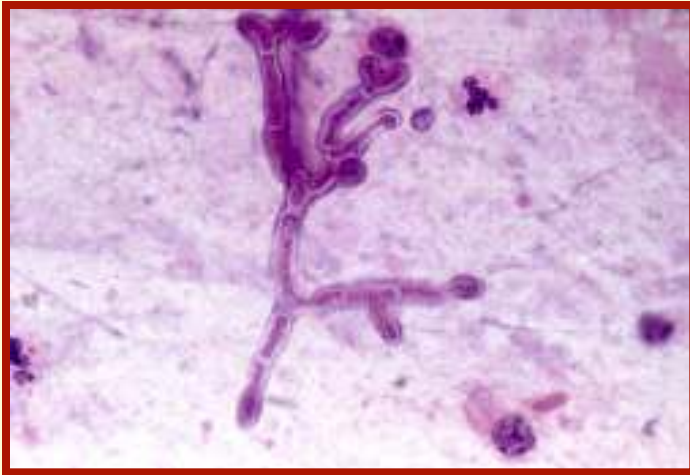
YÖNTEM	YAPILAR
Gram boyası	Bakteriler, Gram pozitif, tomurcuklanan maya hücreleri (+ psödohif, gerçek hif)
Potasyum hidroksit (KOH) ile ıslak preparat hazırlama	Hif, artrokonidyum
"Kalkoflor" beyazı ile floresan boyama	Hif, artrokonidyum, maya hücreleri
Çini mürekkebi	Kapsül boşluğu, maya hücreleri

Direk mikroskopik inceleme

Mikroskopik inceleme



Mikroskopik / Histopatolojik inceleme



Mucor species in biopsy material. Note broad, irregular, non-septate hyphae with right angle (arrow) branching.

Kültür



Kültür - -

Hangi besiyerleri, hangi ekim koşulları?

- (Rutin bakteriyolojik besiyerleri)
- Sabouraud dekstroz agar
(Ekim teknikleri)
- (Gerektiğinde) antibiyotik eklenmiş besiyeri
- 30°C, 35°C

Kültürün Artıları ve Eksileri

AVANTAJLAR	DEZAVANTAJLAR
"ALTIN STANDART"	Duyarlılık ve özgüllük
Tanımlama	Eşik koloni değerleri
Duyarlılık	Kontaminasyon
Duyarlılık - test	Erken tanı

Ön/Ara Raporlar ve Kritik Değerler

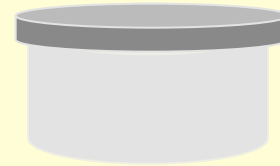
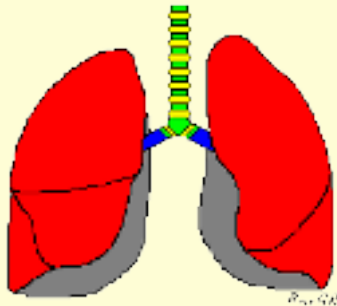
- Steril örnek - Direk mikr. - Fungal Yapı
 - İmmünokompl. -Direk mikr. - Hif
- İmmünokompl. -Kültür - Küf (Ön Rapor)

Uygun Örnek Seçimi

Bir küf mantarına bağlı alt solunum yolu enfeksiyonu şüphesinde uygun örnek?

İzolasyon şansı

Biyopsi > BAL > DTA > Balgam



≥2
örnekte
aynı küf

Sputum and bronchial secretion samples are equally useful as bronchoalveolar lavage samples for the diagnosis of IPA in selected patients

Escibano et al. Med Mycol 2015; 53: 235

Abstract

We studied if sputum/bronchial secretions and BAL samples are equally useful for the diagnosis of invasive pulmonary aspergillosis.

We retrospectively selected 14 patients with proven (n =1) or probable (n =13) IPA from whose samples *A. fumigatus* had been simultaneously isolated in BAL and sputum/bronchial secretions between 2006 and 2012. The isolates were identified by sequencing the β -tubulin gene and genotyped using the STRAf assay. Matches between BAL and sputum /bronchial secretions were observed in patients with identical genotypes in BAL and sputum/bronchial secretions.

In 13 of the 14 patients (93%), we found matching genotypes in the BAL and the sputum / bronchial secretion samples. **Genotyping showed that samples of sputum or bronchial secretions were equally useful as samples of BAL for the diagnosis of invasive pulmonary aspergillosis.**

Kültürde Aspergillus ürediğinde...?

24 merkez,
A.B.D.

1209 olgudan
1477 pozitif
kültür

Üreme saptanan
örneklerin çoğu
(%72.9) balgam
(%49.6) veya BAL
(%23.3)

Üreme saptanan 1209 olgudan **245**'inde
(%**20.3**) klinik hastalık var:

KLİNİK HASTALIK	n	(%)
İnvazif aspergilloz	148	12
<i>Kanıtlanmış</i>	90	61
<i>Yüksek olasılıklı</i>	49	33
<i>Düşük olasılıklı</i>	9	6
Kronik nekrotizan aspergilloz	19	2
Aspergillom	43	4

Yüksek riskli olgularda (allojeneik KİT, hematolojik kanser, nütropeni) kültürde üreme olması olguların %50-65'inde IA ile ilişkili. Diğer olgularda oranlar daha düşük. Kontaminasyon olan örnekler ekarte edildiğinde oranlar daha da yükseliyor. (Yüksek risklilerde: %70-80).

Küf - Kontaminasyon

Kontaminasyon? Kolonizasyon? Enfeksiyon?

Eşik değeri?

Vajinal örnek: Enfeksiyon?

Balgam kültürü: Candida üremesi

Oral kaviteden
bulaş

Kolonizasyon

Candida
pnömonisi



Klinik ve diğer bulgular

Significance of the isolation of *Candida* species from airway samples in critically ill patients: a prospective, autopsy study

A total of 77 cases (57%) with pneumonia at autopsy had positive tracheal aspirate and/or BAL cultures for *Candida* spp. performed during the preceding two weeks. No cases of *Candida* pneumonia were identified amongst those 77 cases. In the other 58 patients with autopsy-proven pneumonia and no *Candida* isolation pre-mortem, no *Candida* pneumonia was observed either.

CONCLUSIONS: Despite frequent isolation of *Candida* spp. from the airways, over a two-year period no single case of *Candida* pneumonia was found among the patients with evidence of pneumonia on autopsy. This study indicates that *Candida* pneumonia is an extremely rare occurrence in ICU patients and provides further evidence against the common use of antifungal therapy triggered by a microbiology report of *Candida* isolation from the respiratory tract.

Kültürlerin Değerlendirilmesi, Tanımlama, Sonuç Raporu

- Epidemiyolojik dağılım
- Antifungal ilaçlara duyarlılık profili

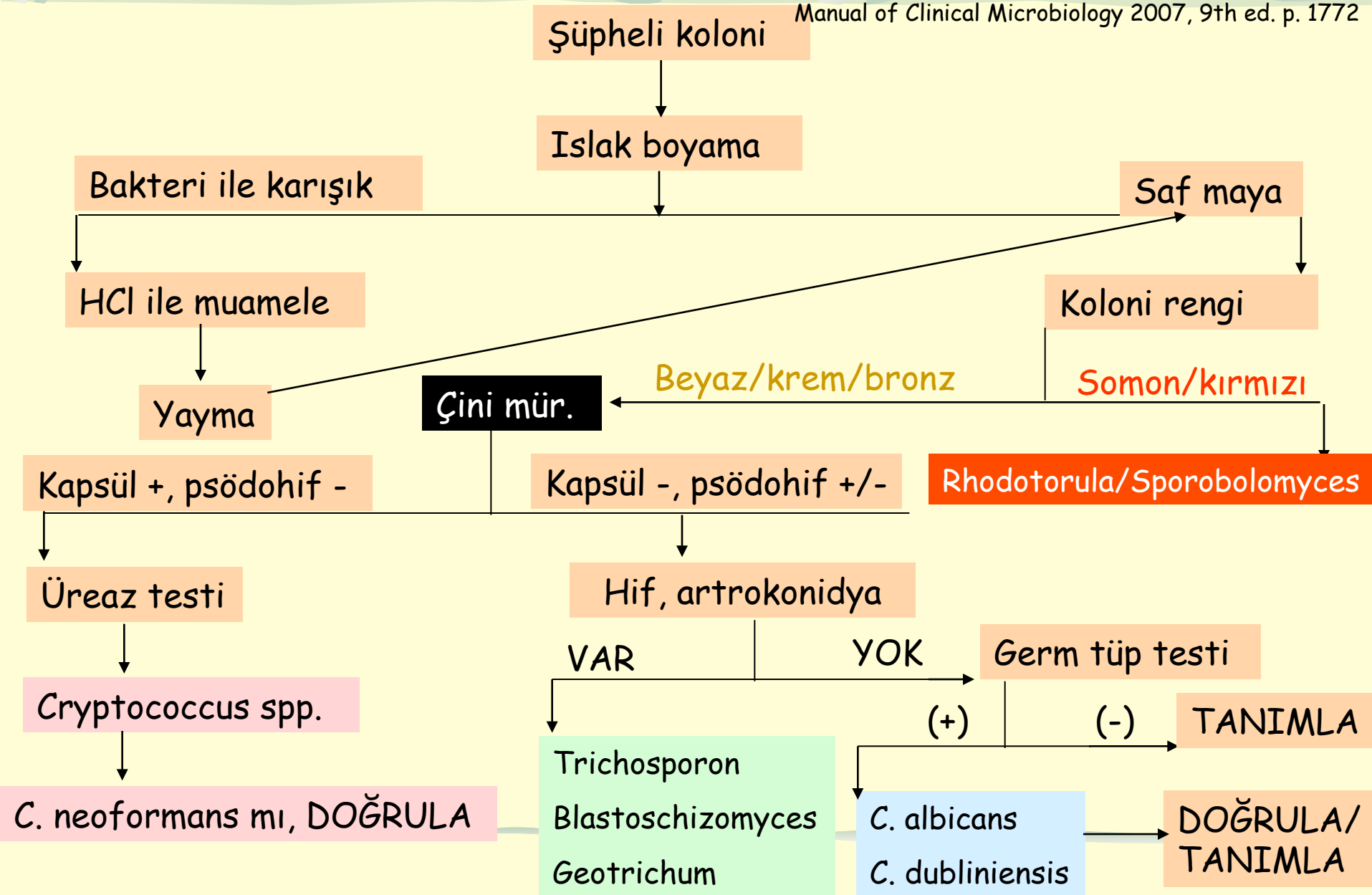
MAYALAR

- Koloni morfolojisi
- Germ tüp testi
- Mısır unlu tween 80 besiyerinde morfolojik görünüm
- Kromojenik besiyerleri
- Asimilasyon reaksiyonları
- Diğer (kapsül varlığı, üreaz aktivitesi...)
- MALDI-TOF MS



Mayaların tanımlanması

Manual of Clinical Microbiology 2007, 9th ed. p. 1772



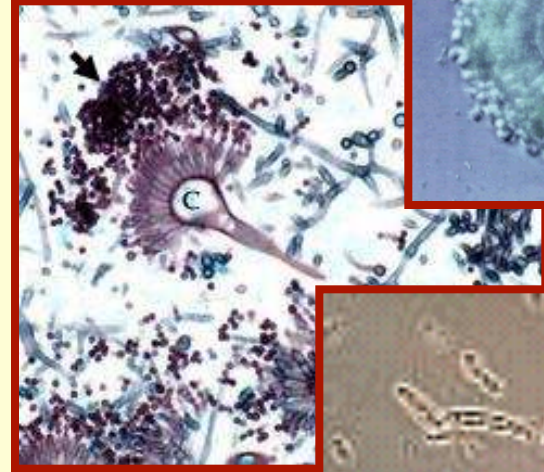
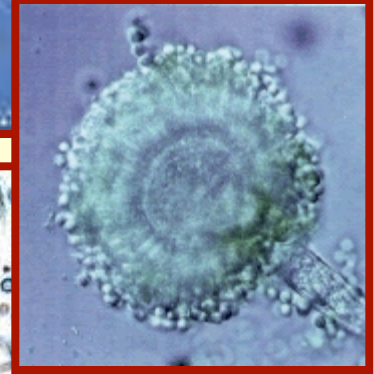
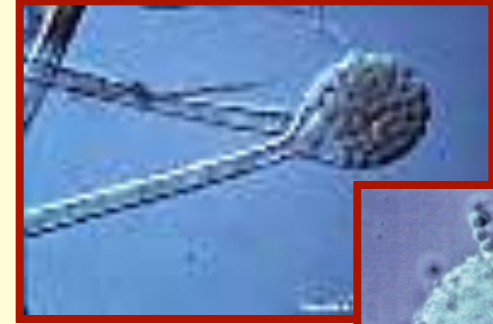
Kültürlerin Değerlendirilmesi, Tanımlama, Sonuç Raporu

“Tür kompleksleri”

- Epidemiyolojik dağılım
- Antifungal ilaçlara duyarlılık profili

KÜFLER

- Koloni morfolojisi
- Mikroskopik görünüm
- Diğer testler
 - Moleküler yöntemler ile doğrulama
- MALDI-TOF MS



Accuracy of Matrix-Assisted Laser Desorption Ionization–Time of Flight Mass Spectrometry for Identification of Clinical Pathogenic Fungi: a Meta-Analysis

Huazhi Ling,^a Zhijie Yuan,^{b,c} Jilu Shen,^a Zhongxin Wang,^a Yuanhong Xu^a

33 articles, 9977 fungal isolates included in the meta-analysis

Significant differences in heterogeneity observed by multivariate metaregression among different systems and methods for calculating ID ratios

‘...Appears promisingly accurate; further studies required to analyse its comprehensive capability for clinical diagnostic lab.’

TABLE 2 The heterogeneity and pooled correct identification ratios by subgroup analyses

Subanalysis	No. of isolates (no. of studies)	Within-group heterogeneity		Correct identification ratio (95% CI) ^a	<i>P</i> comparison with overall ratio (χ^2 value)
		<i>P</i> (<i>Q</i> value)	<i>I</i> ² (95% CI [%])		
Category of strains					
Yeasts	8,842 (27)	<0.0001 (291.38)	91.1 (88.2–93.2)	0.959 (0.943–0.973)	0.129 (2.309)
Molds	1,135 (8)	<0.0001 (45.71)	84.7 (71.6–91.7)	0.934 (0.888–0.969)	0.002 (9.961)
Systems					
Andromas	2,130 (4)	<0.0001 (33.68)	91.1 (80.3–96.0)	0.972 (0.936–0.994)	<0.001 (13.202)
Biotyper	7,289 (24)	<0.0001 (303.10)	92.4 (89.9–94.3)	0.954 (0.933–0.971)	0.725 (0.124)
Saramis	1,926 (6)	<0.0001 (63.71)	92.2 (85.7–95.7)	0.938 (0.881–0.978)	0.001 (10.477)
Vitek MS	1,818 (4)	<0.0001 (31.79)	90.6 (78.9–95.8)	0.933 (0.887–0.968)	<0.001 (16.923)
Source of strains					
Clinical isolates only	9,549 (29)	<0.0001 (332.42)	91.6 (89.0–93.5)	0.950 (0.932–0.965)	0.097 (2.755)
Clinical isolates plus reference strains	428 (4)	0.0304 (8.92)	66.4 (1.5–88.5)	0.988 (0.960–1.000)	0.001 (10.962)
System database					
Commercial database only	8,527 (25)	<0.0001 (282.37)	91.5 (88.7–93.6)	0.955 (0.937–0.970)	0.988 (0)
Commercial database plus self-established database	1,450 (8)	<0.0001 (63.44)	89.0 (80.6–93.7)	0.955 (0.916–0.983)	0.962 (0.002)
Modified outcomes					
All systems	3,366 (11)	0.0003 (32.41)	69.1 (42.4–83.5)	0.987 (0.978–0.994)	<0.001 (73.927)
Biotyper	2,501 (8)	0.1269 (11.28)	37.9 (0–72.6)	0.992 ^b (0.987–0.995)	<0.001 (74.183)

^a Random-effects pooled ratios, except where noted otherwise.^b Fixed-effect pooled ratio.

Identification of filamentous fungi isolates by MALDI-TOF mass spectrometry: clinical evaluation of an extended reference spectra library

Becker et al. Med Mycol 2014 Nov; 52: 826

.....A large in-house library containing 760 strains and representing 472 species

MALDI-TOF MS compared with the classical ID based on morphological observations for 390 clinical isolates

85.6% of the isolates correctly identified (using Brukers' cutoff value for reliability; LogScore >1.70)

Identification of **Mucorales** by Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry (**MALDI-TOF-MS**)

Guedouar et al. ICAAC 2014 POM-025

Forty isolates of Mucorales, mainly from international collections & w. molecular ID

A minimum of 10 spectra used to build the main spectrum profile of each strain using the software MALDI Biotyper (version 3.0, Bruker Daltonics)

19 ref. strains belonging to 11 species (*Lichtheimia corymbifera*, *L. ramosa*, *L. ornata*, *Mucor circinelloides*, *M. indicus*, *Rhizomucor pusillus*, *Rh. miehei*, *Rhizopus oryzae*, *R. microsporus*, *Syncephalastrum racemosum*, *Cunninghamella bertholletiae*) were used for creation of the database.

Good discrimination between species

21 isolates belonging to 5 species were used for validation of the database and correctly identified with $\log(\text{score}) > 2$. No wrong identification, indicating a good specificity.

KAN KÜLTÜRÜ

Candida ve diğer mayalar: ✓

Aspergillus: ✗

Fusarium: ✓

Scedosporium: ✓

Kandidemi şüphesi varlığında: Her gün

Otomatize kan kültürü sistemine

İnkübasyon süresi: 5 gün

Bir seferde 3 (2-4) set

Toplam hacim:

< 2kg: 2-4 ml

2-12 kg: 6 ml

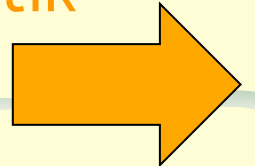
12-36 kg: 20 ml

Erişkin: 40-60 ml

Her set ayrı venlerden, peş peşe (30 dk.içinde)

Aerob, anaerob,?: Fungal besiyeri-litik

sistemin de kullanılması gerekli mi?



Otopsi çalışmaları:

Kandidemide kan kültürünün duyarlılığı: (ort.) ~%50 ; optimal %70

Ostrosky-Zeichner et al. Crit Care Med 2006; 34: 857

Sims et al. Arch Med Res 2005; 36: 660

Berenguer et al. DMID 1993; 17: 103

Otopsi çalışmaları:

Kan kültürü pozitiflik oranı - **tutulan organ sayısı**

Ortalama kan kültürü pozitifliği: %43

Tek organ tutulumu: %28

>3 organ tutulumu: %78

Dissemine kandidoz: %58

Berenguer et al. DMID 1993; 17: 103

"Lack of utility of the lysis-centrifugation blood culture method for detection of fungemia in immunocompromised cancer patients"

Yalancı pozitiflik ve kontaminasyon oranı yüksek
(“Isolator” system)

Creger et al. JCM 1998; 36: 290

"A comparative study of blood culture conventional method vs. a modified lysis / centrifugation technique for the diagnosis of fungemias"

İki yöntemle saptanan izolasyon oranı aynı ancak modifiye lizis sentrifügasyon yöntemiyle üreme daha çabuk

Santiago et al. Rev Iberoam Micol 2004; 21:198

BACTEC Myco / F litik şişelerinde, BACTEC standart şişelerine kıyasla izolasyon oranında bir artış yok.

Ancak, Myco / F litik sistem kullanıldığında *C. glabrata* daha hızlı üreyor.

Kirby et al. Arch
Pathol Lab Med 2009;133:93

BACTEC - Fungal besiyerinin kullanılması, Yoğun Bakım ya da Hematoloji olguları gibi dirençli veya multipl bakteriyal üremenin olası olduğu olguların kan kültürleri için yararlı olabilir.

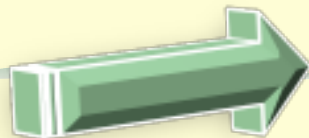
Chiarini et al. JCM 2008; 46: 4029

National Surveillance of Fungemia in Denmark (2004 to 2009)[∇]


Maiken Cavling Arendrup,^{1*} Brita Bruun,² Jens Jørgen Christensen,³ Kurt Fuursted,⁴
Helle Krogh Johansen,⁵ Poul Kjældgaard,⁶ Jenny Dahl Knudsen,⁷ Lise Kristensen,⁸
Jens Møller,⁹ Lene Nielsen,¹⁰ Flemming Schønning Rosenvinge,¹¹ Bent Røder,¹²
Henrik Carl Schönheyder,¹³ Marianne K. Thomsen,¹⁴ and Kjeld Truberg¹⁵

$P = 0.003$). The variation in distribution of *C. glabrata* between centers using Bactec (17.9%, 231/1,289) and those using BacT/Alert (23.6%, 381/1,612) was statistically significant ($P = 0.0002$). This was also the case if the analysis was performed separately for the group of 60 to 79 years of age (Bactec, 19.2% [131/684]; BacT/Alert, 24.9% [219/880], $P = 0.0071$). *C. krusei*,

Recent reports have suggested that the choice of blood culture system may influence the recovery of *C. glabrata* and that the Bactec system may be inferior to the BacT/Alert system, in this respect (6, 44). The present data support this observation, as the recovery rate of *C. glabrata* was significantly lower at centers using the Bactec system than at centers using the BacT/Alert system. A theoretical bias for this observation could be that the age distribution varied between centers using the two blood culture systems, and therefore, the analysis was repeated for the 60- to 79-year-old age group with the same result. It is consequently suggested that the mycosis medium be included in blood cultures at centers using the Bactec system when a patient is at risk for candidemia.



Impact of systemic antifungal therapy on the detection of *Candida* species in blood cultures in clinical cases of candidemia

S. Bailly^{1,2,3}  • C. Garnaud^{1,4} • M. Cornet^{1,4} • P. Pavese⁵ • R. Hamidfar-Roy⁶ • L. Foroni⁷ • S. Boisset⁸ • J.-F. Timsit^{3,9} • D. Maubon^{1,4}

The Bactec Mycosis IC/F (Mycosis; BD Diagnostics, Sparks, MD, USA) bottle is a selective medium developed to improve the recovery of fungi from blood. It contains antibiotic and lytic agents with no adsorbing resins [15]. The Bactec Plus Aerobic/F (Aerobic) and the Bactec plus Anaerobic/ F (Anaerobic; BD Diagnostics) bottles contain nonionic adsorbing resins to neutralize antibiotics. For each bottle, the volume recommended for inoculation was 8–10 mL of blood.

[0.12; 0.68]). The combination of Anaerobic and Mycosis bottles allowed a 100 % positivity rate for *C. glabrata*. SAT significantly affects BC results. Because they provide additional and complementary results, this study supports the concomitant use of resin and selective bottles, especially in patients receiving SAT.

KAN KÜLTÜRÜ - TERCİH

Otomatize sistem
Hasta popülasyonu

Kan kültüründe mikst fungal üreme:

Hacettepe Üniv. 1999-2013

1635 örnek
% 2.4

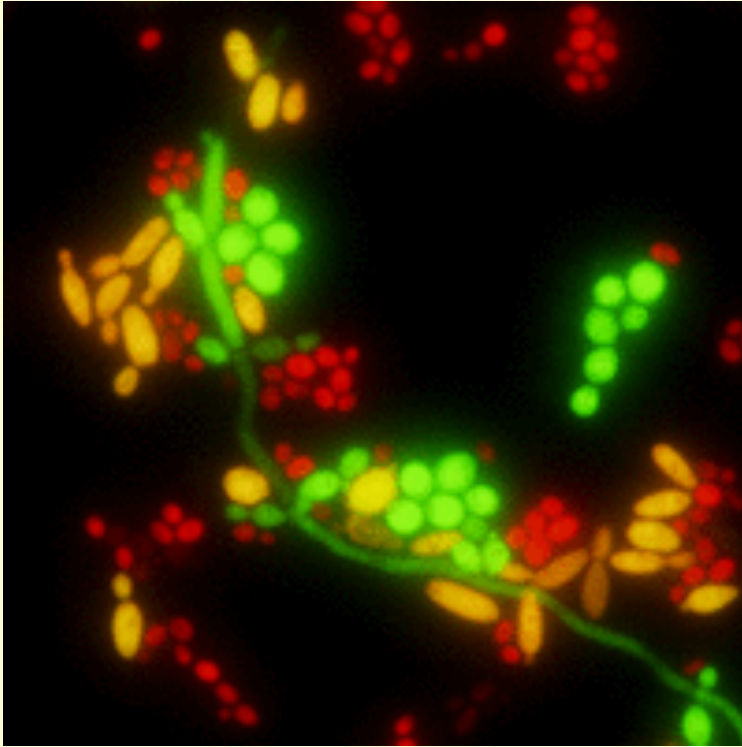
Tür	Kan (n)	Kateter (n)
C.alb+C.dubl	6	6
C.alb+C.glab	3	4
C.alb+C.guillier	0	1
C.alb+C.kefyr	1	3
C.alb+C.krus	0	1
C.alb+C.lusit	0	1
C.alb+C.pps	2	2
C.alb+C.trop	0	2
C.pps+C.glabr	1	0
C.pps+C.lusit	2	1
C.pps+C.norveg/ incons	0	1
C.trop+C.krus	0	1
C.kefyr+C.lusit	1	0

Kan kültüründen tür düzeyinde direk tanımlama

Kan kültürü / Klinik örnek / Koloniden tanımlama

Nükleik asit hibridizasyon yöntemi

Candida-PNA **FISH**: Floresan işaretli, türe özgü rRNA'yı hedefleyen peptid nükleik asit problemleri



Duyarlılık: %99, özgüllük: %99-100
(klinik örnekler)

yeşil: albicans / parapsilosis

sarı: tropicalis

kırmızı: glabrata / krusei

negatif: diğer

PNA-FISH: Hacettepe deneyimi 2013-2014

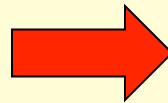
Hasta No.	PNA-Tarih	ÜREME ve RAPORLAMA	PNA- SONUÇ	KÜLTÜR-SONUÇ	ÖRNEK TÜRÜ
1	02.09.2013	04.09.2013	C. albicans/ C. parapsilosis	C.albicans	KAN
2	02.09.2013	06.09.2013	C. albicans/ C. parapsilosis	C. parapsilosis	KATETER
3	11.09.2013	13.09.2013/27.09.2013	C. albicans/ C. parapsilosis	C. parapsilosis+ C.glabrata	KAN
4	23.09.2013	24.09.2013	C. albicans/ C. parapsilosis	C.albicans	KAN
5	24.09.2013	26.09.2013	C. albicans/ C. parapsilosis	C.albicans	KAN
6	24.09.2013	26.09.2013	C. albicans/ C. parapsilosis	C.albicans	KAN
7	04.10.2013	08.10.2013	negatif	C. neoformans	KAN
8	08.10.2013	11.10.2013	negatif	Blastoschizomyces capitatus	KATETER
9	08.10.2013	10.10.2013	C. albicans/ C. parapsilosis	C.albicans	KAN
10	08.10.2013	11.10.2013	C. albicans/ C. parapsilosis	C. albicans + C.dubliniensis	KAN
11	31.10.2013	05.11.2013	C.glabrata/C.krusei	C.glabrata	KAN
12	01.11.2013	05.11.2013	C.glabrata/C.krusei	C.glabrata	KAN
13	08.11.2013	11.11.2013	C.glabrata/C.krusei	C.glabrata	KATETER
14	15.11.2013	20.11.2013	C.glabrata/C.krusei	C.glabrata	KAN
15	25.11.2013	27.11.2013	C. albicans/ C. parapsilosis	C.albicans	KAN
16	27.11.2013	29.11.2013	C. albicans/ C. parapsilosis	C. parapsilosis	KAN
17	28.11.2013	29.11.2013	C. albicans/ C. parapsilosis	C. parapsilosis	KATETER
18	01.12.2013	11.12.2013	C.glabrata/C.krusei + C. tropicalis	C. tropicalis	KAN
19	10.12.2013	13.12.2013	C.glabrata/C.krusei	C.glabrata	KAN
20	16.12.2013	19.12.2013	C. albicans/ C. parapsilosis	C.albicans	KAN
21	25.12.2013	31.12.2013	C.glabrata/C.krusei	C. krusei	KAN
22	28.12.2013	02.01.2014	C.glabrata/C.krusei	C.glabrata	KAN
23	08.01.2014	16.01.2014	C.glabrata/C.krusei	C. krusei+C.dubliniensis	KAN

Rapid Identification and Susceptibility Testing of *Candida* spp. from Positive Blood Cultures by Combination of Direct MALDI-TOF Mass Spectrometry and Direct Inoculation of Vitek 2

Institute of Medical Microbiology, University Hospital Münster, Münster, Germany

Evgeny A. Idelevich*, Camilla M. Grunewald, Jörg Wüllenweber, Karsten Becker

Using modified thresholds for species identification (Score 1.5 w. 2 identical consecutive propositions):



63% of BC identified by *direct* MALDI-TOF MS

Direct MALDI-TOF results for Rapid ID

Table 1. *Candida* species identification rates by using direct MALDI-TOF MS method, n=24.

Species	Total number of samples	Number of identified samples	Identification rate, %
<i>C. glabrata</i>	12	7	58.3
<i>C. albicans</i>	9	6	66.7
<i>C. dubliniensis</i>	2	1	— ^a
<i>C. krusei</i>	1	1	— ^a
Total	24	15	62.5

^aIdentification rate was not calculated due to the low number of isolates.

Rapid differentiation of *Candida albicans* from non-*albicans* species by germ tube test directly from BacTAlert blood culture bottles

Jolanta A. Terlecka, Philipp A. du Cros, C. Orla Morrissey and Denis Spelman

Infectious Diseases and Microbiology Unit, The Alfred Hospital, Melbourne, Vic., Australia

Utility of the Germ Tube Test for Direct Identification of *Candida albicans* from Positive Blood Culture Bottles[∇]

Donald C. Sheppard,^{1*} Marie-Claude Locas,² Christiane Restieri,² and Michel Laverdiere²

Department of Microbiology and Immunology and Department of Medicine, McGill University, Montreal, Quebec, Canada,¹ and University of Montreal, Hôpital Maisonneuve-Rosemont, Montreal, Quebec, Canada²

Received 11 June 2008/Returned for modification 14 July 2008/Accepted 25 July 2008

We compared the germ tube test for the direct identification of *Candida albicans* from positive blood culture bottles, with results obtained from subcultured colonies. The direct germ tube test was 87.1% sensitive and 100% specific for the identification of *C. albicans* when the results obtained from fungal colonies were compared.

Comparative Analysis of Simulated Candidemia Using Two Different Blood Culture Systems and the Rapid Identification of *Candida albicans*

Bo Rae G. Park¹, Tae-Hyoung Kim², Hye Ryoum Kim¹, and Mi-Kyung Lee¹

Departments of ¹Laboratory Medicine and ²Urology, Chung-Ang University College of Medicine, Seoul, Korea

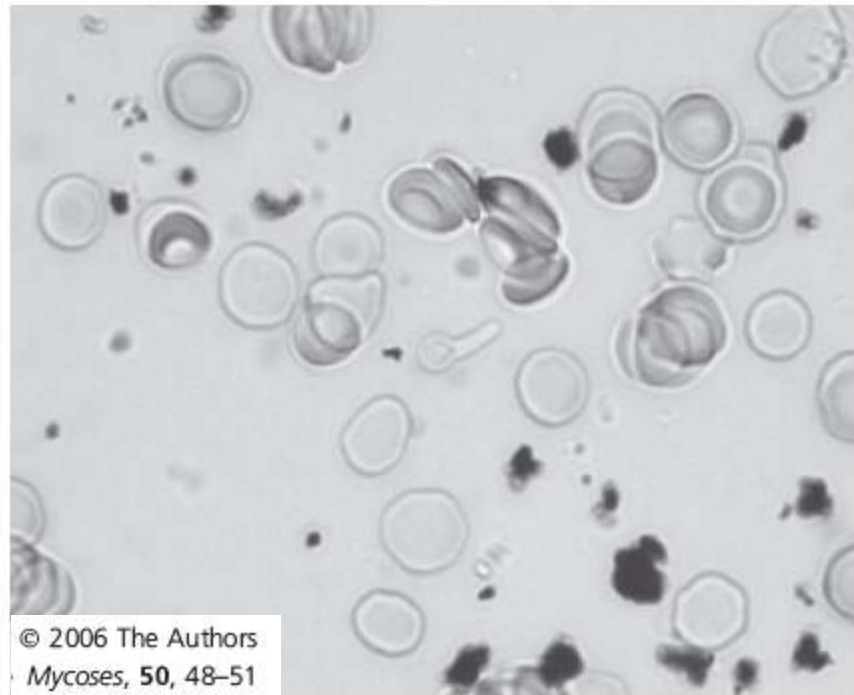


Figure 1 Wet preparation (×400) of positive germ tube test performed directly from BacTAlert blood culture medium.

Kan kültüründen doğrudan germ tüp testi: Hacettepe Üniv.

Doğan-Ayçık ve ark. 3. Ulusal Klinik Mikrobiyoloji Kongresi 2015 Antalya Poster No. PS292

Doğrudan GTT Sonucu		Üreme Sonrası Elde Edilen Tanımlama Sonucu
Pozitif (n=47)	42	<i>C.albicans</i>
	1	<i>C.dublinsiensis</i>
	1	<i>C.albicans_+ C.glabrata</i>
	2	<i>C.albicans_+ C.parapsilosis</i>
	1	<i>C.albicans_+ C.parapsilosis_+ C.guilliermondii</i>
Negatif (n=35)	4	<i>C.albicans</i>
	12	<i>C.glabrata</i>
	11	<i>C.parapsilosis</i>
	5	<i>C.tropicalis</i>
	1	<i>C.lusitaniae</i>
	1	<i>C.kefyr</i>
	1	<i>C.albicans_+ C.parapsilosis</i>

Klasik gt testi ile uyum: %91.5 Yalancı (+): Ø

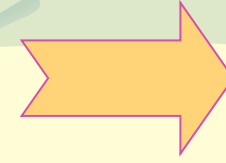
...Sonuç olarak kültür:

Altın standart

“SoR” : Temel Tanı Yöntemi
“A”

Konvansiyonel tanı: zorluklar...

Uygun, steril
klinik örnek

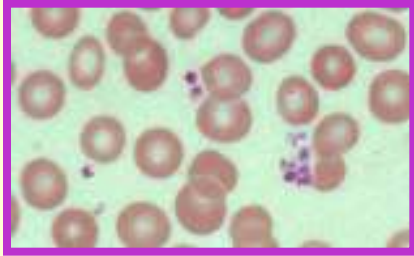


X

	DİREK MİKROSKOPI	KÜLTÜR
<u>ERKEN TANI</u>	✓ (<u>Olası</u> tanı)	X (küfler)
DUYARLILIK	X	X
ÖZGÜLLÜK	✓	✓ / X (küfler)
KESİN TANI (ALTIN STANDART)	X	✓

Konvansiyonel tanı yöntemlerinin duyarlılığı

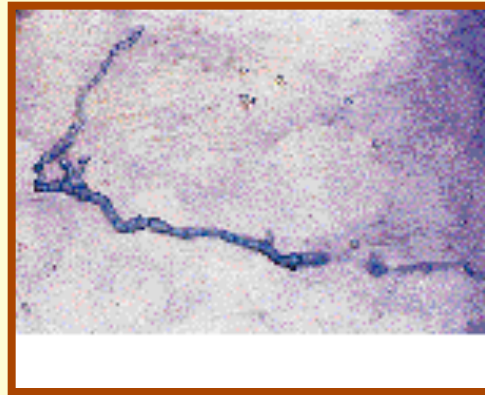
•Örnek



Trombositopeni

Genel durum
bozukluğu

•Miktar



•Bilgi, deneyim



Mucorales

