Anaerobic bacteriology: new generation technology
Improving diagnostics??

The Postgraduate Technical Workshop on Anaerobic infections entitled “Anaerobic bacteria: next generation technology meet anaerobic diagnostics” will be held in Groningen, The Netherlands, from 26-28th of September 2016.

Objectives: To learn how to deal with anaerobes
- Diagnostics
- Sampling and culturing
- Molecular detection
- Antibiotic resistance
- Pathogenesis
- MALDI-TOF MS

Target audience: 20-25 clinical microbiologists, infectious disease specialists and technicians interested in anaerobes.

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Selection of intestinal Bacteroides strains using a novel chromogenic agar

Lead by: József Sóki (Hungary)
Participants: Ingrid Wybo (Belgium), Samo Jeverica (Slovenia), Nurver Ulger (Turkey), Suzanna Catalina Stingu (Germany), Daniel Tierney (UK), John D. Perry (UK)

During a non-supported study of the ESGAI members, a new chromogenic Bacteroides medium (CBM) developed by John D. Perry and colleagues in the UK was tested. This medium was used by 5 anaerobic laboratories in different European countries (Belgium, Germany, Hungary, Slovenia, Turkey) to obtain Bacteroides spp from the faeces of healthy individuals and from patients who received carbapenem therapy during ICU treatment. Faeces samples were suspended in BHI medium anaerobically for 48 h. Isolates with different colony morphologies were subcultured and their species identities were determined by MALDI-TOF MS (Bruker). Altogether 213 B. fragilis group strains belonging to 14 different species were isolated from stools of 45 individuals. Only 5 anaerobes not belonging to Bacteroides genus were found, showing the high selectivity of this medium for isolation of normal flora. Bacteroides strains for studying their antibiotic susceptibility and resistance gene content, compared with clinical isolates.

Analysis of the antibiotic resistance and antibiotic resistance gene content of European intestinal Bacteroides isolates

Lead by: József Sóki (Hungary)
Participants: Ingrid Wybo (Belgium), Samo Jeverica (Slovenia), Nurver Ulger (Turkey), Suzanna Catalina Stingu (Germany), Daniel Tierney (UK), John D. Perry (UK)

The aim of this ESGAI-supported study is to evaluate the antibiotic susceptibility of normal flora Bacteroides/Parabacteroides genus isolates (altogether 213 isolates) and compare it with data obtained earlier in Europe for clinical isolates. Six European countries are participating in it. This part of the study is ongoing, final results will be published at the end of 2016. Till now antibiotic susceptibility carried out by agar dilution shows similar results obtained for clinical isolates during the previous Europe-wide surveillance study with Bacteroides/Parabacteroides isolates. In parallel resistance gene content, such as the cepA, cfxA, cfiA and ermF gene is also examined by RT-PCR. Till now 71 isolates were tested. Of 20 B. fragilis 16 were cepA-positive and 4 were cfxA-negative. While all the non-fragilis Bacteroides (NFB) were uniformly cepA and cfiA-negative. The cfxA gene prevalence was higher in the total Bacteroides (58.6 % vs. 18.0 %, p=0.001) and the ermF gene prevalence was also higher in the total Bacteroides (54.3 % vs. 14.9 %, p <0.001) when comparing faecal isolates with previously analysed clinical isolates (see: Eitel et al.: Anaerobe 21: 43-49; 2013). The resistance data corresponds with the PCR data, but the analysis should be extended to all the Bacteroides strains isolated (213 strains) from the stool samples with the aid of the CBM.

The ENRIA project (Organised by ACM Veloo, Groningen, The Netherlands)

The European Network for the Rapid Identification of Anaerobes (ENRIA) is a collaboration between the ESGAI and the ESGEM. Its goal is to optimize the MALDI-TOF MS database of the Bruker system for the identification of anaerobic bacteria. The core group consists of 7 core laboratories from different European countries; England, Wales, Denmark, Hungary, Belgium, France and The Netherlands. The leading institute is the department of Medical Microbiology, University Medical Center Groningen, The Netherlands.

At this moment about 650 strains representing 250 different species have been collected and characterized using 16S rRNA gene sequencing. From part of these strains a Main Spectral Profile (MSP) has been created. For gram-positive anaerobic cocci (GPAC) 110 MSPs were added to the database, representing 17 species not present yet or present in insufficient numbers (<5 MSPs). Validation, using 129 unknown clinical isolates of GPAC, showed an increase in reliable species identification (log score 2) from 57% to 81%. The effect of optimization of the MALDI-TOF MS database on other anaerobic genera is in progress.


Veloo ACM et al., The optimization and validation of the Biotype MALDI-TOF MS database for the identification of gram-positive anaerobic cocci. In preparation

Investigation of antimicrobial susceptibility patterns of Prevotella isolates in European countries

(Organised by Nurver Ulger Toprak, Istanbul, Turkey)

The objective of this study is to determine the susceptibility patterns of 500 clinically important Prevotella species isolated from different European countries and three university hospitals in Turkey. Species differences regarding the sources of isolates and region-dependent differences in resistance rates will be investigated. Strains prospectively collected between 2014 and 2015 from Hungary, Belgium, Denmark, France, Greece, The Netherlands, Croatia, Austria, Germany, Kuwait and Turkey were identified phenotypically in parallel with MALDI-TOF MS (VITEK MS, Biomerieux, France) and 16S rRNA gene sequencing. Their susceptibility to ampicillin, amoxicillin/sulbactam, piperacillin/tazobactam, imipenem, meropenem, clindamycin, cefoxitin, mexitoxacin, tigecycline, metronidazole, tetracyclin and erythromycin was determined using E-test (Biomerieux, France) method.

The results of this study will be presented during the ECCMID 2016 in Amsterdam.

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About ESGAI

ESGAI is the ESCMID Study Group for Anaerobic Infections, and currently consists out of 51 members from 21 countries. ESGAI is focusing on all topics, which are connected with the role of anaerobic bacteria in infection and health. Among others, how to diagnose difficult to identify anaerobes by MALDI-TOF MS, how to test antibiotic susceptibility more easily (EUCAST methodology). We continue the surveillances about the antibiotic resistance among important anaerobes and we also deal with anaerobes involved in oral infections.

Our aim is to organise postgraduate workshops during ECCMIDs and outside of the ECCMIDs. The Scientific Affairs Subcommittee of ESMID evaluated the activities of SGs and ESGAI was among the top-five performers in 2014.

To join the study group, please visit the website of ESCMID (www.escmid.org/esgai).