

# CURRENT RESEARCH TOPICS IN PHARMACY: *Microbiology Debates*

December 14th, 2022 14.00 PM ISTANBUL

FOR REGISTRATION:



## First Session- Moderator: Büşra ERTAŞ 14.00-15.45 PM

Welcome- Assoc.Prof.Esra TATAR

Bacteriotherapy – Dr. Zahraa AMER HASHIM  
Mosul University, Mosul, Iraq

Antibiotic resistance – Assist.Prof. Pervin RAYAMAN  
Marmara University, Istanbul, Turkey

The vaccination in Albania : An assessment of the level of knowledge and behaviour of the population regarding vaccines.- Assoc.Prof. Mirela MIRAÇI  
University of Medicine, Tirana, Albania

Chicken contamination with thermotolerant Campylobacter in Tunisia: Antibiotic resistance and virulence profiling –Dr.Awatef BEJAOU  
Institut Pasteur de Tunis, Tunis, Tunisia

## Second Session- Moderator: Esra TATAR 16.00-17.45 PM

Plant phenolics and their synthetic derivatives as inhibitors of *Helicobacter pylori* : Suggestion for a new mechanism of action -  
Assoc.Prof. Simone CARRADORI  
"G. d'Annunzio" University of Chieti-Pescara University, Chieti Italy

Pomegranate rind extract with Zn (II) combination as a new therapeutic agent for oral care products- Dr.Vildan ÇELİKSOY  
Cardiff University, Cardiff, UK

The antimicrobial effects of honey and other bee-derived products- Dr.Saira KHAN  
Cardiff University, Cardiff, UK

Chair

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Prof. Levent KABASAKAL & Assoc. Prof. Esra TATAR

ORGANIZING & SCIENTIFIC COMMITTEE

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JRP

Journal of Research in Pharmacy

An international open-access journal of pharmacy and pharmaceutical sciences

Formerly published as Marmara Pharmaceutical Journal

ONLINE  
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## BACTERIOTHERAPY

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Humans are in symbiosis with the microbiota in the gastrointestinal tract, with over 100 trillion microbiota, including 1000 types and 1 million associated genes. Genetic analysis have shown that failure of the human-enteric symbiosis ecosystem, the so-called dysbiosis, is closely related to growing disease groups, including inflammatory bowel disease (IBD) in developed countries [1]. The change in daily habit and lifestyle have been the major contributing factors. This lifestyle refers to the inappropriate use of antibiotics, higher rate of cesarean section, artificial milk, improved hygiene, high-fat and low-fiber diet, and stress, which all can cause dysbiosis [2]. Bacteriotherapy is a treatment that prophylactically and therapeutically corrects the composition of disturbed intestinal microbiota using “good bacteria” and is a promising recent development that has been proved to be effective in managing a number of infectious diseases, cancer and psychotic and nervous disorders [3].

The worldwide emergence of bacterial resistance to antibacterial agents has produced a need for new methods of combating bacterial infections. This need is forced on us by the long time lag in developing new antibacterial agents. Even though new agents may be in the pipeline, they will not solve all current resistance problems. In addition, we also have to recognise that the use of antibacterial agents not only targets resistant bacteria but also disturbs normal human flora, which may itself further inhibit our defence against infection. Bacteriotherapy, as an alternative, has been shown effective in preventing and treating certain infections of bacterial, viral and fungal origin. Fecal microbiota transplantation (FMT) is the administration of a solution of fecal matter from a donor into the intestinal tract of a recipient in order to directly change the recipient’s microbial composition and confer a health benefit. Borody and colleagues used FMT to treat 6 patients with refractory ulcerative colitis and follow up at 1–13 years post-FMT showed no clinical evidence of ulcerative colitis [4]. Similarly, Duplessis et al. utilized FMT to treat a patient with severe Crohn's disease complicated by refractory CDI [5]. Obesity is another condition that could potentially benefit from FMT. FMT from lean to obese individuals led to increased insulin sensitivity in the patients compared to the control group [6].

Gut microbiome is becoming more important in the realm of cancer immunotherapy. Waves of clinical trials have been initiated to examine the clinical outcomes of modulating gut microbiota in the context of cancer therapy [7].

However, it remains challenging for bacteriotherapy to be adopted into clinical practice at this stage as little is known about its mechanism of action on modulating the immunity during cancer treatment. The proposed mechanisms by which bacteria act as anti-cancer agents have been studied and proposed to be either through enhancing human immunity, activating inflammasome pathways, CD4, CD25 and

CD8 anti-tumor effectors T cell responses, TNF- $\alpha$  innate immune system in bacteria-based tumor necrosis, through released substances (such as bacteriocins, biosurfactants, phenazine 1,6-di-carboxylic acid). They also act as a carrier for cancer therapeutic agents and bacteria-based microrobot (Bacteriobot) [8].

The intestinal microbiota play a relevant role in disorders of the nervous system. The microbiota-gut-brain axis may represent a new target in the prevention and treatment of neuropsychiatric disorders. Analyses of the available research results have shown that selected bacteria affect the gut-brain axis in healthy people and people with selected diseases i.e., Alzheimer's disease, Parkinson's disease, depression, and autism spectrum disorders and hence acquired the term "Psychobiotics" [9].

In conclusion, bacteriotherapy is an old-modern concept in the field of therapeutics showing promising findings. Bacteriotherapy is a rich field for conducting clinical research and investigations taking into consideration its potential adverse effects in the future work.

**Keywords:** Probiotics, fecal microbiota transplantation, dysbiosis, microbiota

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