

Sequential (PPI + amoxi 1 g for 5 days then PPI + clarithro 0.5 g + tinidazole 0.5 g for 5 days,  $N = 294$ ); 65% Triple (PPI + clarithro 0.5 g + amoxi 1 g for 7 days,  $N = 121$ ), 57% Levo (PPI + amoxi 1 g + levofloxacin 0.25 g for 10 days,  $N = 24$ ), 100% Concomitant (PPI + clarithro 0.5 g + amoxi 1 g for 14 days,  $N = 2$ ) and 73% Undefined (likely Triple: patients missing documentation,  $N = 470$ ). In general practice, Triple and “Undefined” were the most popular regimens as 1st (96%) to 5th line treatments. Referral center used 1st line Sequential/Concomitant and 2nd line Levo until 2016 and then 1st/2nd line Concomitant & It; Pylera®.

**Conclusions:** In geographical regions with high clarithromycin resistance, the use of Triple/Sequential/Undefined eradication regimens for HP infection does not follow current guidelines. This approach causes ineffective, harmful antibiotic (over)-prescription and potential intestinal dysbiosis. A better training program is necessary to avoid unnecessary over- misuse of antibiotics for HP eradication, especially in General Practice.

### P081-F | Peculiarities in nutrition of the adult population of the city of Kazan

S. Fomina; [N. Stepanova](#)

*Kazan Federal University (KFU), Kazan, Russian Federation*

**Background:** At present, significant changes in the structure and quality of nutrition of the population living in the territory of the Russian Federation take place. Incompetence in food culture and unhealthy eating becomes a serious risk factor for many diseases.

**Material and methods:** A survey questionnaire of the population of the city of Kazan (256 persons) aged from 18 years and older; analysis of the morbidity was carried out based on the annual reports (form No. 12) from the medical institutions of Kazan (2005–2016).

**Results:** The study of nutrition showed that 55% took meals irregularly and monotonously. Every 6th–7th respondent took meals once a day. The frequency of taking meat products 1–2 times a week among the surveyed made 27.6%. The population preferred fish and sea products once (58.5%) or two-three (27.2%) times a week. 29% of the surveyed population included cereals into the menu 2–3 times a week, and 27.7% – once a week. Our study revealed that 2.1% of the population never ate vegetables and fruit, 14.3% – once and 27.3% 2–3 times a week.

**Conclusions:** Analysis of the morbidity showed that the highest growth rates of the primary disease incidence among the adult population compared with the year of

2005 was determined in the class of K00-K92 – 36% (1st place), G00-G98 – 7.3% (2nd place), I00-I99 – 3.2% (3rd place). The primary incidence of digestive diseases increased significantly for 10 years ( $R^2 = 0.6943$ ). Thus, imbalanced nutrition has a considerable effect on the incidence level of digestive diseases.

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### P082-F | Antibiotic resistance of dairy and probiotic lactobacilli and its transfer to pathogenic bacteria

[E. Anisimova](#); N. Bruslik; D. Yarullina

*Kazan Federal University, Kazan, Russian Federation*

**Background:** Lactobacilli are common in foods and are members of the resident gastrointestinal microbiota of humans. These bacteria may function as hosts of antibiotic resistance genes, which can be transferred to pathogenic bacteria. The aim was to characterize antibiotic resistance of Lactobacillus spp. and to estimate the potential transfer of resistance genes from lactobacilli to opportunistic pathogens that share the same intestinal habitat.

**Methods:** Nineteen Lactobacillus strains were isolated from probiotics and dairy products and identified by MALDI Biotyper. They were screened for phenotypic resistances to 14 antibiotics by the disk diffusion method. The erythromycin (Erm) and tetracycline (Tet) resistance genes were amplified by PCR and sequenced (Sanger method). The tet(K) gene from plasmid DNA of *L. fermentum* strain 5–1 was transferred by electroporation to sensitive bacteria *Citrobacter freundii*, which became resistant to Tet, as proved by growth on agar with Tet and PCR amplification of tet(K) gene.

**Results:** *L. plantarum* and *L. fermentum* isolates showed the resistance profile characteristic for lactobacilli. They possessed intrinsic resistance to ciprofloxacin (84.2% of strains) and vancomycin (68.4% of strains), while showing susceptibility to protein synthesis inhibitors, except aminoglycosides. Most strains were susceptible to beta-lactam antibiotics and rifampicin.

The Erm resistance gene erm(B) was detected in chromosomal DNA of *L. fermentum* 5–1, corresponding to its resistance phenotype. These strain sensitive to Tet was positive for silent genes tet(K) and tet(M) in plasmid DNA. Moreover, tet(K) gene of *L. fermentum* 5–1 was successfully transferred by electroporation to sensitive bacteria *Citrobacter freundii*, which became resistant to Tet.

**Conclusions:** This study presents a cause for concern because dairy *Lactobacillus* strain has been demonstrated to serve as reservoir organism for acquired resistance genes that can be spread to pathogenic bacteria.

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### **P083-F | Effects of the lactobacilli supplementation on the anxious-phobic state of mice with altered microbiota**

A. Arslanova; M. Rudich; K. Chernova; O. Yakovleva

*Kazan (volga Region) Federal University, Kazan, Russian Federation*

Intestinal microbiota is a bacteria community that helps to maintain a dynamic metabolic balance in the body. The microflora can affect the physiological, behavioral and cognitive functions of the brain. This two-way communication system forms the axis “microbiota-intestine-brain.” Therefore, changes in the intestinal microbiota can affect the functions of the digestive system and the CNS. Changes in microflora in cases of infection, disease and a wrong diet can lead to a dysbacteriosis that causes anxiety and stress. The purpose of this study was to compare the anxious-phobic state of mice in control and with altered microbiota.

Experiments were performed on mice aged 20–25 days. Animals were divided into 3 groups: (i) a control group receiving i.p. injections of saline ( $n = 10$ ); (ii) mice receiving i.p. injections of antibiotics (a cocktail of neomycin, vancomycin, amphotericin B, ampicillin, metronidazole, AB,  $n = 10$ ); (iii) mice receiving injections of antibiotics together with supplementation of lactobacilli to their water ( $4 \times 10^6$  cells/mL, AB + LB,  $n = 10$ ). To assess the anxiety state an Open Field, the Black/White Camera test and an integral anxiety index (IAI) were used.

In the control animals no changes were observed in all tests. IAI was slightly decreased reflected the gradual adaptation of animals. AB group demonstrated the rise of emotionality: an increase in the number of acts of grooming and defecation, a decreased time of leaving from the center compared with the control and AB + LB groups. The animals of AB group demonstrated the reduced time spent in the light chamber and an increase of IAI, whereas in AB+LB group the time spent in the light chamber and IAI didn't change.

Thus, the disturbance of normal microflora leads to the anxious-phobic state in mice. Simultaneous supplementation of lactobacilli prevented the observed changes, which indicate a positive effect of normal microflora on stress resistance.

### **P084-F | The effects of short-chain fatty acids on the motility of the mouse colon**

I. Shaidullov; D. Sorokina; K. Chernova; M. Shafigullin; G. Sitdikova

*Kazan (volga Region) Federal University, Kazan, Russian Federation*

Short chain fatty acids (SCFAs), such as acetate, propionate, and butyrate are key products of fermentation of indigestible carbohydrates by commensal bacteria that reside in the gastrointestinal tract. SCFAs used as a nutrient source by colonic epithelial cells and induced apoptosis in colon cancer cell lines. The colonic SCFAs content may change in patients with irritable bowel syndrome and inflammatory bowel diseases compared with healthy controls. It has been shown that, besides their effect on gut morphology and function, SCFAs have excitatory or inhibitory effects on gastrointestinal motility. However, the mechanisms of SCFAs action on colonic motility are not completely elucidated. In this study, we investigated SCFAs effects on spontaneous and carbachol-induced contractions in mouse colon.

We recorded the contraction of mouse colon segments of 5 mm length under isometric conditions. During the experiment, the organ bath was filled with 37°C Krebs solution continuously bubbled with carbogen. Carbachol was used in concentration 1  $\mu$ M.

After a stable baseline was attained acetate, propionate or butyrate in concentration range from 0.5 to 10 mM were added cumulatively to the bath. All SCFAs induced dose-dependent decrease of the contraction frequency. Acetate and propionate decreased tonic tension without effect on the amplitude of phasic contraction; butyrate decreased the amplitude of the phasic contraction without effect on the tonic tension. Preliminary application of SCFAs at concentration 10 mM decreased the amplitude of carbachol induced increase of the tonic tension.

In summary, this study shows that short chain fatty acids induced dose-dependent inhibitory effects on spontaneous and carbachol induced contraction of the colon. It was concluded that SCFAs may impact in alteration of colonic motility during inflammatory bowel disease and irritable bowel syndrome. Work supported by Program of Competitive Growth of KFU.