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Use of lactulose for creating of the new class of antibiotics

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What is antibiotics?



- **Antibiotics – pharmaceuticals killing different type of bacteria.**
 - **Antibiotics are killing both pathogenic and useful bacteria.**
 - **Antibiotics save from some diseases and may lead to anothers.**
 - **Antibiotics are the basic reason of the disbiosis**
Антибиотики – главная причина дисбактериоза кишечника.
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What is disbiosis?



- Development of the pathogenic microflora in the colon.
 - Intoxication as a result of the growing of pathogenic bacteria.
 - Infringement of the motoric and secretion function of the colon.
 - Infringement of the exchange cholesterol and gall acids.
 - Infringement of the digesting of the vitamins and minerals.
 - Development of the hypotrophies, anemias, hypovitaminosis, fermentopathies.
 - Depressed immunological status.
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Problems. Health is Money.



➤ **Antibiotics market:** **\$ 38 bl**
Penecilins, macrolids
cefalosporin ext.

➤ **Market of medicins for post-antibacterial therapie:** **\$ 27 bl**
Probiotics, gepatoprotectors
antimicotics ext

How to solve this problem?



Traditional formula of Antibiotics:

Antibiotics + Lactose

New formula of Antibiotics:

Antibiotics + Lactulose

A decorative graphic at the bottom of the slide consisting of several concentric, light blue circles that resemble ripples on water, centered towards the right side of the page.

Design of trials



The random test sample included 40 children of both sexes aged 9–17 years with diagnosed Hp-associated gastritis. The initial diagnosis was substantiated by an urease test of antral gastric biopsats obtained upon fibroesophagogastroduodenoscopy (FEGDS).

compositon	№ of patient in the group	Treatment schedule	
		Daily dose	Treatment course
Amoxiclav	10	1350 mg	14 day
Amoxiclav + Lactulose	10	1350 mg 200 mg	14 day
Amoxiclav+ Lactulose	10	1350 mg 600 mg	14 day

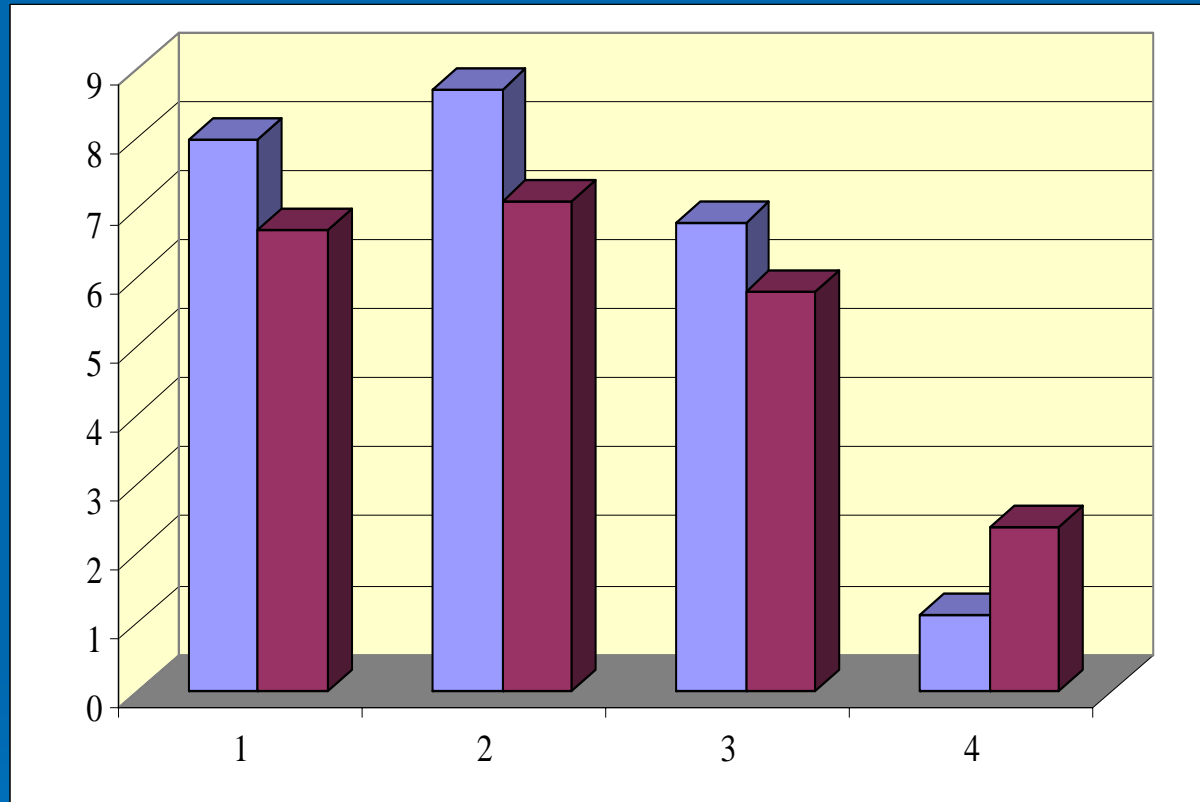
Group # 1. Amoxiclav (1350 mg)



Some characteristics of intestinal microbiocenosis in patients of the control group before and after treatment (lg CFU/g)

№ of patients	Bifidobacterium spp.		Lactobacillus spp.		Candida albicans	
	Before tr.	After tr.	Before tr.	After tr.	Before tr.	After tr.
1	10	8	7	6	0	2
2	9	8	6	5	0	4
3	9	8	4	4	3	1
4	8	7	6	6	0	2
5	9	6	7	6	2	3
6	8	7	8	7	2	3
7	9	7	7	5	3	4
8	8	6	7	6	1	2
9	9	6	8	6	0	1
10	8	8	8	7	0	2
Average	8.7 ± 1.5	7.1 ± 1.1	6.8 ± 0.9	5.8 ± 0.7	1.1	2.4 ± 0.2

Group # 1. Conclusions.



1 - *Escherichia coli*

2 - *Bifidobacterium*

spp.

3 - *Lactobacillus*

spp.

4 - *Candida*

albicans

The titers of *Escherichia coli*, bifidobacteria and lactobacilli were significantly decreased ($p < 0.01$), while those of *Candida albicans* were significantly increased.

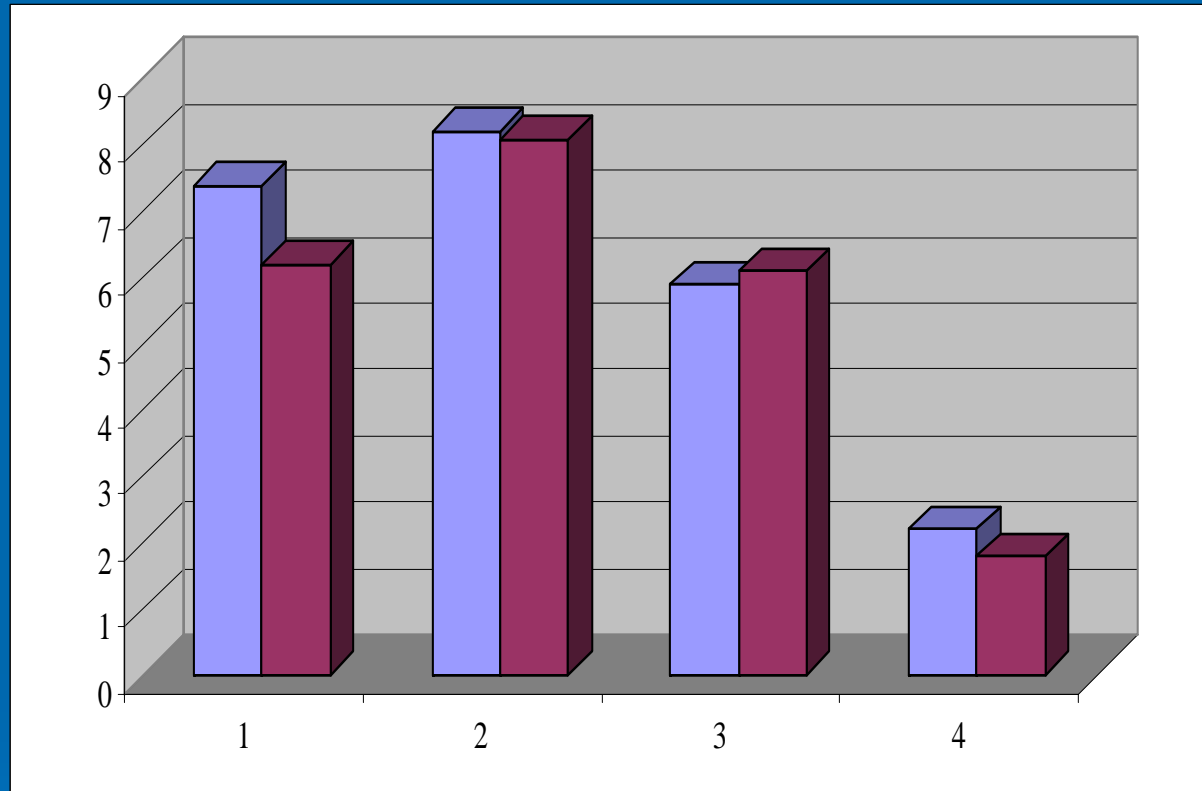
Group # 2. A (1350 mg) + L (200 mg)



Some characteristics of intestinal microbiocenosis in patients of the control group before and after treatment (lg CFU/g)

№ of patients	Bifidobacterium spp.		Lactobacillus spp.		Candida albicans	
	Before tr.	After tr.	Before tr.	After tr.	Before tr.	After tr.
1	8	8	4	8	0	0
2	9	9	4	6	3	3
3	9	9	6	6	0	0
4	8	6	7	6	3	3
5	8	8	6	6	3	0
6	8	8	6	5	0	0
7	9	9	6	6	4	3
8	8	8	8	6	3	3
9	9	9	6	6	3	3
10	7	7	6	6	3	3
Average	8.2 ± 1.2	8.1 ± 1.1	5.9 ± 0.7	6.1 ± 0.8	2.2 ± 0.2	1.8 ± 0.1

Group # 2. Conclusions.



1 - *Escherichia coli*

2 - Bifidobacterium

spp.

3 - Lactobacillus

spp.

4 - *Candida*

albicans

The titers of *Escherichia coli* were significantly decreased ($p > 0.01$), while those of bifidobacteria and lactobacilli were similar both before and after treatment. The titers of *Candida albicans* showed a tendency to decrease; however, this difference was insignificant.

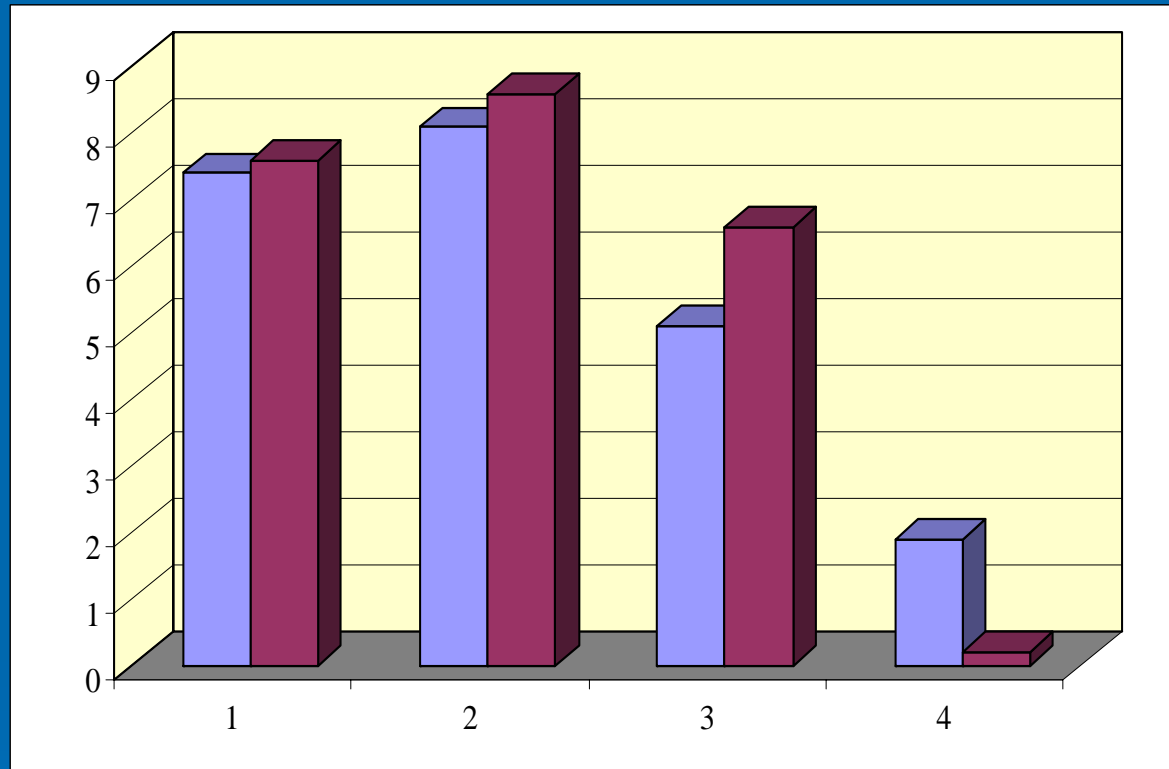
Group # 3. A (1350 mg) + L (600 mg)



Some characteristics of intestinal microbiocenosis in patients of the control group before and after treatment (lg CFU/g)

№ of patients	Bifidobacterium spp.		Lactobacillus spp.		Candida albicans	
	Before tr.	After tr.	Before tr.	After tr.	Before tr.	After tr.
1	9	8	5	6	3	0
2	9	9	4	8	0	0
3	8	8	4	4	2	0
4	9	8	6	6	0	0
5	8	8	5	4	2	0
6	9	9	6	6	4	1
7	8	9	6	8	0	0
8	7	9	5	8	3	0
9	8	9	4	8	0	0
10	6	9	6	8	4	1
Average	8.1 ± 0.9	8.6 ± 1.1	5.1 ± 0.7	6.6 ± 0.8	1.9 ± 0.4	0.2

Group # 3. Conclusions.



1 - *Escherichia coli*

2 - Bifidobacterium

spp.

3 - Lactobacillus

spp.

4 - *Candida*

albicans

The titers of *Escherichia coli* in Group 3 patients were similar before and after treatment. The titers of bifidobacteria and lactobacilli were significantly increased ($p < 0.01$); *Candida*-, *Proteus*- and *Klebsiella*-associated infections were fully eliminated ($p < 0.001$).

Conclusions



- The monotherapy with AMOXICLAV causes dysbiosis manifested as a statistically significant decrease in the titers of the major representatives of the obligate microflora (*Bifidobacterium*, *Lactobacillus*, *Escherichia coli*) and an increase in the titers of *Candida albicans*.
 - Combined therapy with the pharmaceutical composition Lactulose + AMOXICLAV has a high therapeutic potential. Lactulose added to the treatment schedule improves the state of large intestinal microflora.
 - Lactulose has a dose-dependent protective effect. In Group 3 patients to whom the prebiotic was administered in the daily dose of 600 mg, this effect was more apparent than in Group 2 patients (daily dose = 200 mg).
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Main conclusions

New class of
antibiotics
are
ecobiotics
