Хазард у храни

Универзитет у Београду, ФВМ, Катедра за хигијену и технологију наирница анималног порекла

БЕЗБЕДНОСТ

- *“Safety is relative. It is not an inherent biological characteristics of a food. A food may be safe for some people but not for others, safe at one level of intake but not another, or safe at one point in time but not later. Instead, we can define a safe food as one that does not exceed an acceptable level of risk. Decisions about acceptability involve perceptions, opinions, and values, as well as science.”*

Nestle M. 2003. Safe Food: Bacteria, Biotechnology and Bioterrorism. Berkeley: University of California Press

"SOUND SCIENCE" – "SCIENCE BASED"

- *"Science is the trump card that we play in disputes about values."*

  Pielke R. and Rayner S. 2004. Editors' introduction. Environmental Science and Policy 7: 355-56

- *"The appeal to –science- will not necessarily resolve disputes. We might assume science speaks a universal language of truth, but it does not. Scientific knowledge is especially contested in such complex domans as human health. Citizens often ask question to which science can have no answers, which simply highlights that scientific risk assessment often are forced to make implicit value judgments to come to a conclusion."*

  Kachatourians, G. 2001. How well understood is the "science" of food safety? In P. Phillips and R. Wolfe (Eds.), Governing Food: Science, safety and trade (pp. 13-23). Montreal: McGill-Queen's University Press

ACTA ABP BIOCHIMICA POLONICA

Vol. 60, No 3/2013
285–297
on-line at: www.actabp.pl

Review

Salmonella and cancer: from pathogens to therapeutics*

Paulina Chorobik, Dominik Czaplicki, Karolina Ossysek and Joanna Bereta✉

Department of Cell Biochemistry, Faculty of Biochemistry, Biophysics and Biotechnology, Jagiellonian University

Bacterial cancer therapy is a concept more than 100 years old — yet, all things considered, it is still in early development. While the use of many passive therapeutics is hindered by the complexity of tumor biology, bacteria offer unique features that can overcome these limitations. Microbial metabolism, motility and sensitivity can lead to site-specific treatment, highly focused on the tumor and safe to other tissues. Activation of tumor-specific immunity is another important mechanism of such therapies. Several bacterial strains have been evaluated as cancer therapeutics so far, *Salmonella* Typhimurium being one of the most promising. *S.* Typhimurium and its derivatives have been used both as direct tumoricidal agents and as cancer vaccine vectors. VNP20009, an attenuated mutant of *S.* Typhimurium, shows significant native toxicity against murine tumors and was studied in a first-in-man phase I clinical trial for toxicity and anticancer activity. While proved to be safe in cancer patients, insufficient tumor colonization of VNP20009 was identified as a major limitation for further clinical development. Antibody-fragment-based targeting of cancer cells is one of the few approaches proposed to overcome this drawback.

Key words: bacterial cancer therapy, immunotherapy, cancer vaccine, tumor targeting, *Salmonella*, VNP20009

Received: 01 May, 2013; accepted: 26 June, 2013; available on-line: 05 July, 2013

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ELSEVIER

Advanced Drug Delivery Reviews
Volume 185, June 2022, 114295

Advances in *Salmonella* Typhimurium-based drug delivery system for cancer therapy

Wenfei Chen [a b], Yining Zhu [a], Zhirong Zhang [a], Xun Sun [a] ✉

Show more

https://doi.org/10.1016/j.addr.2022.114295

SCIENTIFIC REPORTS

OPEN

Engineering *Salmonella* as intracellular factory for effective killing of tumour cells

Received: 31 March 2016
Accepted: 05 July 2016
Published: 28 July 2016

Eva María Camacho, Beatriz Mesa-Pereira, Carlos Medina, Amando Flores & Eduardo Santero

Salmonella have many desirable properties as antitu
tumours and induce tumour regression. Additionally,
deliver therapeutic proteins intratumourally. The ma
of therapeutic molecules from intratumoural bacteria
system based in the lysis operon of the lambda phag
Salmonella thus releasing its content. The system wa
allows efficient production of therapeutic molecules i
that liberates bacteria from the vacuoles to a cytosol
elements makes this strain a putative powerful instru
engineered strain for the intracellular production and
able to sequentially produce and release the cytotoxi
thus inducing host cell death. Our results show that t
protein release is essential to efficiently kill tumour c
engineering of more efficient bacteria for cancer ther

biomedicines

MDPI

Review

Salmonella-Based Targeted Cancer Therapy: Updates on A Promising and Innovative Tumor Immunotherapeutic Strategy

Christian Ronquillo Pangilinan [1] and Che-Hsin Lee [1,2,*]

1 Department of Biological Sciences, National Sun Yat-sen University, Kaohsiung 80424, Taiwan; chtianbiol@gmail.com
2 Department of Medical Research, China Medical University Hospital, China Medical University, Taichung 404, Taiwan
* Correspondence: chlee@mail.nsysu.edu.tw; Tel.: +886-7-5252000-3620

Received: 29 March 2019; Accepted: 29 April 2019; Published: 2 May 2019

Abstract: Presently, cancer is one of the leading causes of death in the world, primarily due to tumor heterogeneity associated with high-grade malignancy. Tumor heterogeneity poses a tremendous challenge, especially with the emergence of resistance not only to chemo- and radiation- therapies, but also to immunotherapy using monoclonal antibodies. The use of *Salmonella*, as a highly selective and penetrative antitumor agent, has shown convincing results, thus meriting further investigation. In this review, the mechanisms used by *Salmonella* in combating cancer are carefully explained. In essence, *Salmonella* overcomes the suppressive nature of the tumor microenvironment and coaxes the activation of tumor-specific immune cells to induce cell death by apoptosis and autophagy. Furthermore, *Salmonella* treatment suppresses tumor aggressive behavior via inhibition of angiogenesis and delay of metastatic activity. Thus, harnessing the natural potential of *Salmonella* in eliminating tumors will provide an avenue for the development of a promising micro-based therapeutic agent that could be further enhanced to address a wide range of tumor types.

ЗАКОН О БЕЗБЕДНОСТИ ХРАНЕ

"Службени гласник РС", број 41 од 2. јуна 2009, 17 од 14. марта 2019.

V. БЕЗБЕДНОСТ ХРАНЕ И ХРАНЕ ЗА ЖИВОТИЊЕ

1. Општи услови за безбедност хране

Забрана

Члан 25.

Забрањено је стављање у промет хране која није безбедна. Храна није безбедна, ако је штетна по здравље људи и ако није погодна за исхрану људи.

Храна није погодна за исхрану људи, ако је та храна неприхватљива за употребу којој је намењена, због контаминације спољним или неким другим фактором, као и због труљења, кварења или распадања.

ЗАКОН О БЕЗБЕДНОСТИ ХРАНЕ

"Службени гласник РС", број 41 од 2. јуна 2009, 17 од 14. марта 2019.

Храна није безбедна уколико садржи:

1) средства за заштиту биља, биоциде или контаминанте или њихове метаболите или производе разградње изнад максимално дозвољених концентрација;

2) средства за заштиту биља, односно биоциде чија употреба није одобрена или дозвољена;

3) супстанце са фармаколошким дејством или њихове метаболите који се не смеју давати животињама које служе за производњу хране или прекорачују максимално дозвољене количине остатака или нису одобрени или регистровани за примену на животињама које служе за производњу хране или нису одобрени као адитиви у храни за животиње које служе за производњу хране;

4) супстанце са фармаколошким дејством или њихове метаболите код лечених животиња, а да није испоштован прописани период каренце;

5) микроорганизме, вирусе, паразите и њихове развојне облике који представљају опасност за здравље људи;

6) материје (физичке, хемијске, радиоактивне) које саме или заједно са другим материјама прелазе максимално дозвољене вредности и представљају опасност по здравље људи

ПРАКСА КОЈА ГАРАНТУЈЕ 3 ОСНОВНЕ ОПЕРАЦИЈЕ :

1. ЗАШТИТА ОД НЕПОЖЕЉНЕ КОНТАМИНАЦИЈЕ
2. ПРЕВЕНЦИЈА РАЗВОЈА НЕПРИХВАТЉИВЕ КОНТАМИНАЦИЈЕ
3. ЕФИКАСНО УКЛАЊАЊЕ КОНТАМИНАЦИЈЕ

ТЕРМИЧКА ОБРАДА

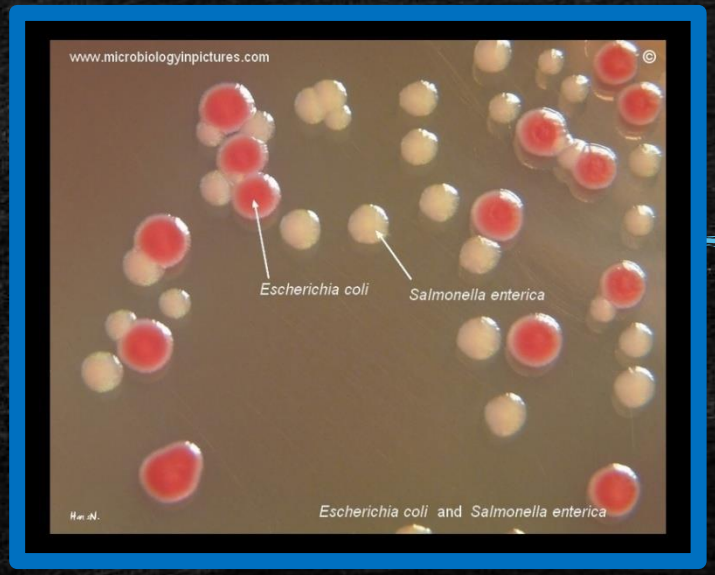
ДОБРА ХИГИЈЕНСКА ПРАКСА

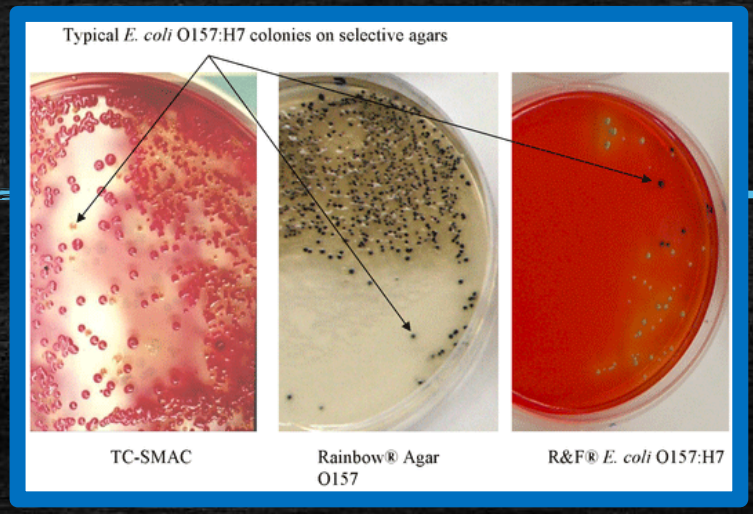
КОНТРОЛА ТЕМПЕРАТУРЕ

БЕЗБЕДНОСТ vs КВАЛИТЕТ

❖ Безбедност намирница - гаранција да храна неће наудити потрошачу када се припрема и/или конзумира у складу са планираном наменом

❖ Већина атрибута безбедности намирница се не може директно запазити, већ се захтева лабораторијска процедура за њихову детекцију





БЕЗБЕДНОСТ *vs* КВАЛИТЕТ

- Атрибути квалитета се лако запажају – гледањем, мирисањем, или једноставним мерењем (уочавање промене сензорних атрибута - промене општег изгледа, мириса, укуса, конзистенције

Дефиниција ХАЗАРДА

- Биолошки, хемијски или физички агенс или услови у храни са потенцијалом да изазову негативне ефекте по здравље.

(Codex Alimentarius Commission)

- Услови или физичке ситуације са потенцијалом непожељних последица.

(Society for Risk Analysis)

БИОЛОШКИ ХАЗАРД

ХЕМИЈСКИ ХАЗАРД

ФИЗИЧКИ ХАЗАРД

Дефиниција РИЗИКА

- Ситуације које укључују изложеност опасностима
- Вероватноћа да ће се нешто непријатно догодити

(Compact Oxford Dictionary of Current English)

<u>Ризик- дефиниција која се користи у анализи ризика</u>

Неповољан догађај који се може десити у будућности

2 компоненте:

1) вероватноћа да ће се догађај десити,

2) последице догађаја који ће се десити

РИЗИК у односу на ОПАСНОСТ

- *Опасност: нешто са потенцијалним негативним утицајем*
- *Ризик: вероватноћа опасности, обично процењена као комбинација вероватноће и последица специфицираног хазарда који је реализован*

J Environ Sci Health B. 2017 Dec 2;52(12):864-870. doi: 10.1080/03601234.2017.1361764. Epub 2017 Sep 26.

Enterotoxin production and antimicrobial susceptibility in Staphylococci isolated from traditional raw milk cheeses in Serbia.

Bulajic S[1], Colovic S[2], Misic D[3], Djordjevic J[1], Savic-Radovanovic R[1], Asanin J[3], Ledina T[1].

Author information

Abstract

This study was undertaken to determine the prevalence of coagulase positive staphylococci (CPS) by examining a total of 71 raw milk cheeses. Additionally, enterotoxigenicity, antimicrobial susceptibility and the presence of mecA and mecC genes in the staphylococcal isolates were investigated. The isolation and enumeration procedure of CPS followed the International Organization for Standardization (ISO) standard. The presumptive staphylococci were identified by matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF MS) using the VITEK MS system. VIDAS® Staph enterotoxin II assay was used for the detection of classical enterotoxins. Antimicrobial susceptibility testing (AST) was accomplished performing the disk diffusion method. All suspected methicillin resistant staphylococci were investigated for the presence of mecA and mecC genes by PCR assay. A high prevalence (87.32%) of CPS was detected in the cheeses at contamination levels up to 5.58 log CFU g^{-1}. Among 47 staphylococcal isolates screened for enterotoxin production, only one isolate, identified as S. hyicus, was confirmed as being enterotoxigenic. Resistance to penicillin (63.70%) was the most common resistance among the tested Staphylococcus aureus isolates. The dominant phenotypic resistance patterns in coagulase negative staphylococci (CNS) were resistance to ofloxacin and fusidic acid. All CNS isolates were susceptible to the clinically important antibiotics clindamycin, chloramphenicol, gentamicin, linezolid, rifampicin and trimethoprim-sulfamethoxazole. The mecA and mecC genes were not detected. To the best of our knowledge, this is the first study concerning evaluation of the presence of methicillin resistant staphylococci (MRS) in dairy products in Serbia.

KEYWORDS: Antimicrobial resistance; Serbian raw milk cheeses; enterotoxin production; staphylococci

PMID: 28949803 DOI: 10.1080/03601234.2017.1361764

[Indexed for MEDLINE]

International Agency for Research on Cancer

World Health Organization

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans

English | Français

NEWS | MEETINGS | CLASSIFICATIONS | PUBLICATIONS | PREAMBLE | STAFF

You are here: Home / Classifications / **List of Classifications**

CLASSIFICATIONS

- List of Classifications
  - Volumes 1-120
  - Alphabetical order
  - CAS® Registry Number order
  - Cancer site

AGENTS CLASSIFIED BY THE *IARC MONOGRAPHS*, VOLUMES 1–120

Group 1	*Carcinogenic to humans*	120 agents
Group 2A	*Probably carcinogenic to humans*	81
Group 2B	*Possibly carcinogenic to humans*	299
Group 3	*Not classifiable as to its carcinogenicity to humans*	502
Group 4	*Probably not carcinogenic to humans*	1

For definitions of these groups, please see the Preamble.

It is strongly recommended to consult the complete *Monographs* on these agents, the publication date, and the list of studies considered. Significant new information might support a different classification.

For agents that have not been classified, no determination of non-carcinogenicity or overall safety should be inferred.

Agents Classified by the *IARC Monographs*, Volumes 1–120

CAS No.	Agent	Group	Volume	Year[1]
003761-53-3	Ponceau MX	2B	8, Sup 7	1987
004548-53-2	Ponceau SX	3	8, Sup 7	1987
023746-34-1	Potassium bis(2-hydroxyethyl)dithiocarbamate	3	12, Sup 7	1987
007758-01-2	Potassium bromate	2B	Sup 7, 73	1999
002955-38-6	Prazepam	3	66	1996
029069-24-7	Prednimustine	3	50	1990
000053-03-2	Prednisone	3	26, Sup 7	1987
000125-33-7	Primidone	2B	108	2016
	Printing inks	3	65	1996
	Printing processes (occupational exposures in)	2B	65	1996
000366-70-1	Procarbazine hydrochloride (NB: Overall evaluation upgraded to Group 2A with supporting evidence from other relevant data)	2A	26, Sup 7	1987
	Processed meat (consumption of)	1	114	In prep.

001402-68-2	Aflatoxins	1	56, 82, 100F, Sup 7	2012
006795-23-9	Aflatoxin M1	2B	56	1993
002757-90-6	Agaritine	3	31, Sup 7	1987
	Alcoholic beverages	1	44, 96, 100E	2012

БИОЛОШКИ ХАЗАРД

- Бактерије, вируси, квасци, плесни и паразити

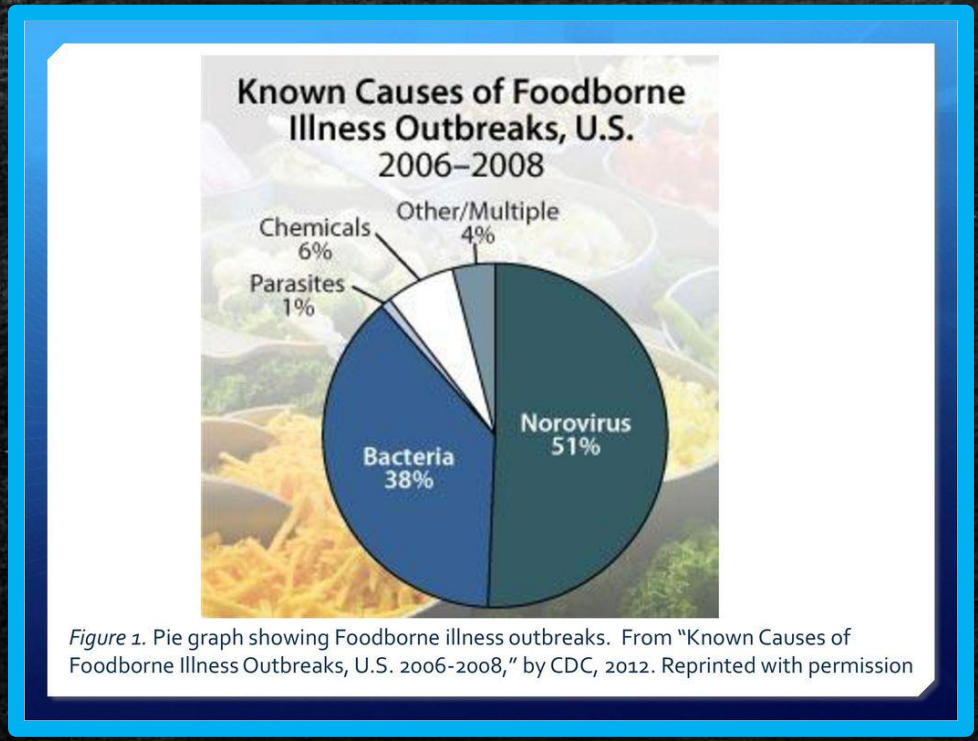


Figure 1. Pie graph showing Foodborne illness outbreaks. From "Known Causes of Foodborne Illness Outbreaks, U.S. 2006-2008," by CDC, 2012. Reprinted with permission

1) Корисни МО

2) МО квара

3) патогени

Common Foodborne Bacteria

- *Bacillus cereus*
- *Campylobacter* spp.
- *Clostridium botulinum*
- *Clostridium perfringens*
- *E. coli*
- *Listeria monocytogenes*
- *Salmonella* spp.
- *Staphylococcus aureus*
- *Yersinia enterocolitica*

БИОЛОШКИ ХАЗАРД

ОБОЉЕЊА ПРЕНОСИВА ХРАНОМ

- ***УЗРОЧНИЦИ:***

i. АЛИМЕНТАРНЕ ИНФЕКЦИЈЕ

(Salmonella spp., Listeria monocytogenes, Campylobacter jejuni, Vibrio parahaemolyticus, Vibrio vulnificus, Yersinia enterocolitica)

i. АЛИМЕНТАРНЕ ИНТОКСИКАЦИЈЕ

(Bacillus cereus –еметични токсин, Staphylococcus aureus, Clostridium botulinum)

i. АЛИМЕНТАРНЕ ТОКСОИНФЕКЦИЈЕ

(Clostridium perfringens, STEC, Bacillus cereus – дијареични токсин)

ГДЕ ПАТОГЕНИ „ЖИВЕ“

ЗЕМЉИШТЕ:
- ✓*Listeria monocytogenes*
- ✓*Bacillus cereus*
- ✓*Clostridium perfringens*
- ✓*Clostridium botulinum*

ИНТЕСТИНАЛНИ ТРАКТ ЖИВОТИЊА:
- *Salmonella* vrste
- *E. coli* O157:H7
- *Campylobacter jejuni*
- *Yersinia enterocolitica*

УСЛОВИ

- For a **foodborne illness** to occur, the following conditions must be present:
- The microorganism or its toxin must be present in food.
- The food must be suitable for the microorganism to grow.
- The temperature must be suitable for the microorganism to grow.
- Enough time must be given for the microorganism to grow (and to produce a toxin).
- The food must be eaten.

The European Union One Health 2022 Zoonoses Report

European Food Safety Authority (EFSA) | European Centre for Disease Prevention and Control (ECDC)

Correspondence: zoonoses@efsa.europa.eu

Abstract

This report by the European Food Safety Authority and the European Centre for Disease Prevention and Control presents the results of the zoonoses monitoring and surveillance activities carried out in 2022 in 27 Member States (MSs), the United Kingdom (Northern Ireland) and 11 non-MSs. Key statistics on zoonoses and zoonotic agents in humans, food, animals and feed are provided and interpreted historically. In 2022, the first and second most reported zoonoses in humans were campylobacteriosis and salmonellosis, respectively. The number of cases of campylobacteriosis and salmonellosis remained stable in comparison with 2021. Nineteen MSs and the United Kingdom (Northern Ireland) achieved all the established targets in poultry populations for the reduction of *Salmonella* prevalence for the relevant serovars. *Salmonella* samples from carcases of various animal species, and samples for *Campylobacter* quantification from broiler carcases, were more frequently positive when performed by the competent authorities than when own checks were conducted. Yersiniosis was the third most reported zoonosis in humans, followed by Shiga toxin-producing *Escherichia coli* (STEC) and *Listeria monocytogenes* infections. *L. monocytogenes* and West Nile virus infections were the most severe zoonotic diseases, with the most hospitalisations and highest case fatality rates. In 2022, reporting showed an increase of more than 600% compared with 2021 in locally acquired cases of human West Nile virus infection, which is a mosquito-borne disease. In the EU, the number of reported foodborne outbreaks and cases, hospitalisations and deaths was higher in 2022 than in 2021. The number of deaths from outbreaks was the highest ever reported in the EU in the last 10 years, mainly caused by *L. monocytogenes* and to a lesser degree by *Salmonella*. *Salmonella* and in particular *S.* Enteritidis remained the most frequently reported causative agent for foodborne outbreaks. Norovirus (and other calicivirus) was the agent associated with the highest number of outbreak human cases. This report also provides updates on brucellosis, *Coxiella burnetii* (Q fever), echinococcosis, rabies, toxoplasmosis, trichinellosis, infection with *Mycobacterium tuberculosis* complex (focusing on *Mycobacterium bovis* and *Mycobacterium caprae*) and tularaemia.

Table 1: Viruses documented to be found in the human gastrointestinal tract (Bosch et al. 2018).

Genus	Genome	Popular name	Disease caused
Enterovirus	ssRNA[a]	Poliovirus	Paralysis, meningitis, fever
		Coxsackie A, B virus	Herpangina, meningitis, fever, respiratory disease, hand-foot-and-mouth disease, myocarditis, heart anomalies, rush, pleurodynia, diabetes[b]
		Echovirus	Meningitis, fever, respiratory disease, rash, gastroenteritis
Hepatovirus	ssRNA	Hepatitis A virus	Hepatitis
Kobuvirus	ssRNA	Aichi virus	Gastroenteritis
Parechovirus	ssRNA	Human parechovirus	Respiratory disease, gastroenteritis, central nerve system (CNS) infection
Orthoreovirus	segmented dsRNA	Human reovirus	Unknown
Rotavirus	segmented dsRNA	Human rotavirus	Gastroenteritis
Norovirus	ssRNA	Human norovirus	Gastroenteritis
Sapovirus	ssRNA	Human sapovirus	Gastroenteritis
Hepevirus	ssRNA	Hepatitis E virus	Hepatitis
Mamastrovirus	ssRNA	Human astrovirus	Gastroenteritis, CNS infection
Flavivirus[c]	ssRNA	Tick-borne encephalitis virus	Encephalitis, meningitis
Coronavirus	ssRNA	Human coronavirus	Gastroenteritis, respiratory disease, SARS, MERS
Orthomyxovirus	segmented ssRNA	Avian influenza virus	Influenza, respiratory disease
Henipavirus	ssRNA	Nipah virus, Hendra virus	Encephalitis, respiratory disease
Parvovirus	ssDNA	Human parvovirus	Gastroenteritis
Mastadenovirus	dsDNA	Human adenovirus	Gastroenteritis, respiratory disease, conjunctivitis
Polyomavirus	dsDNA	Polyomavirus	Progressive multifocal leukoencephalopathy, diseases of urinary tract
Alphatorquevirus	ssDNA	TT (Torque Teno) virus	Unknown, hepatitis[b], respiratory disease[b] haematological disorders[b], cancer[b]

ВИРУСИ/ПАРАЗИТИ

- НОРОВИРУС
- САПОВИРУС
- ЕНТЕРОВИРУС
- ХЕПАТОВИРУС (ХЕПАТИТИС А ВИРУС)
- АСТРОВИРУС
- РОТАВИРУС

протозоа:

- *Cryptosporidium* sp.
- *Cyclospora cayetanensis*
- *Entamoeba histolytica*
- *Giardia* sp.
- *Toxoplasma gondi*
- *Cystoisospora belli*

нематоде:

- Anisakis
- Trihinela

Хемијски хазард

- биолошки токсини – микотоксини (афлатоксини, охратоксин, зеараленон..
- загађивачи околине (ENVIRONMENTAL CONTAMINANTS) - тешки метали, диоксини
- детерџенти и средства за санитацију
- пракса у пољопривреди: пестициди, хербициди и инсектициди
- адитиви, помоћна средства и боје које нису дозвољене
- резидуе ветеринарских лекова
- контаминанти представљени кроз процес производње (акрил амид)
- контаминанти пореклом "FOOD-contact" материјала (пластичне масе)

физички хазард

Комадићи стакла, метални опрљци, нокти,накит,делови машине, делови пластике

CHINESE MILK SCANDAL 2008.

Алергени

Уредба (ЕУ) 1169/2011 прописује обавезно означавање присуства најзначајнијих нутритивних алергена

big 8

Кикирики
Коштуњаво воће – орашасти плодови (бадеми, ораси, лешници)
Млеко
Јаја
Соја
Риба
Љускари (јастог, краба...)
Брашно

Правилник о декларисању, означавању и рекламирању хране

("Службени гласник РС", бр. 19 од 8. марта 2017, 16 од 5. марта 2018, 17 од 28. фебруара 2020.)

- Обавезно је означавање у списку састојака и додатно наглашавање употребом: другачијег фонта, који се јасно разликује од фонта којом су наведени остали састојци, другачијег стила или боје позадине;
- Није потребно наводити алерген ако назив хране јасно упућује на тај састојак (пшенично брашно, јогурт, маслац,...);
- Угоститељски објекти, приликом презентације хране коју нуде крајњем потрошачу, пре конзумације, треба да истакну све потребне информације о присутности састојака хране који могу да изазову алергије и/или интолеранције

Правилник о декларисању, означавању и рекламирању хране

("Службени гласник РС", бр. 19 од 8. марта 2017, 16 од 5. марта 2018, 17 од 28. фебруара 2020.)

- У Прилогу 1 Правилника дати су састојци који могу да изазову алергије и/или интолеранције
- 1) житарице које садрже глутен, тј. пшеница, раж, јечам, овас и варијетети добијени њиховим укрштањем, као и производи од тих житарица
- 2) љускари (ракови) и производи од љускара;
- 3) јаја и производи од јаја;
- 4) риба и производи рибарства
- 5) кикирики и производи од кикирикија;
- 6) соја и производи од соје

- 7) млеко и производи од млека (укључујући лактозу)
- 8) језграсто воће: бадем (Amygdalus communis L.), лешник (Corylus avellana), орах (Juglans regia), индијски орах (Anacardium occidentale), пекан орах (Carya illinoiesis), бразилски орах (Bertholettia excelsa), пистаћ (Pistacia vera), макадамиа орах и Queensland орах (Maccadamia ternifolia) и њихови производи
- 9) целер и производи од целера;
- 10) слачица и производи од слачице;
- 11) семе сусама и производи од сусама;
- 12) сумпор-диоксид и сулфити у концентрацијама већим од 10 mg/kg или 10 mg/l изражено као SO_2
- 13) лупина и производи од лупине;
- 14) шкољкаши и остали мекушци и њихови производи


ANY
QUESTIONS
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