

8th International Congress "Flour-Bread '15" and the 10th Croatian Congress
of Cereal Technologists "Brašno-Kruh '15."

Opatija

29 - 30 October 2015.

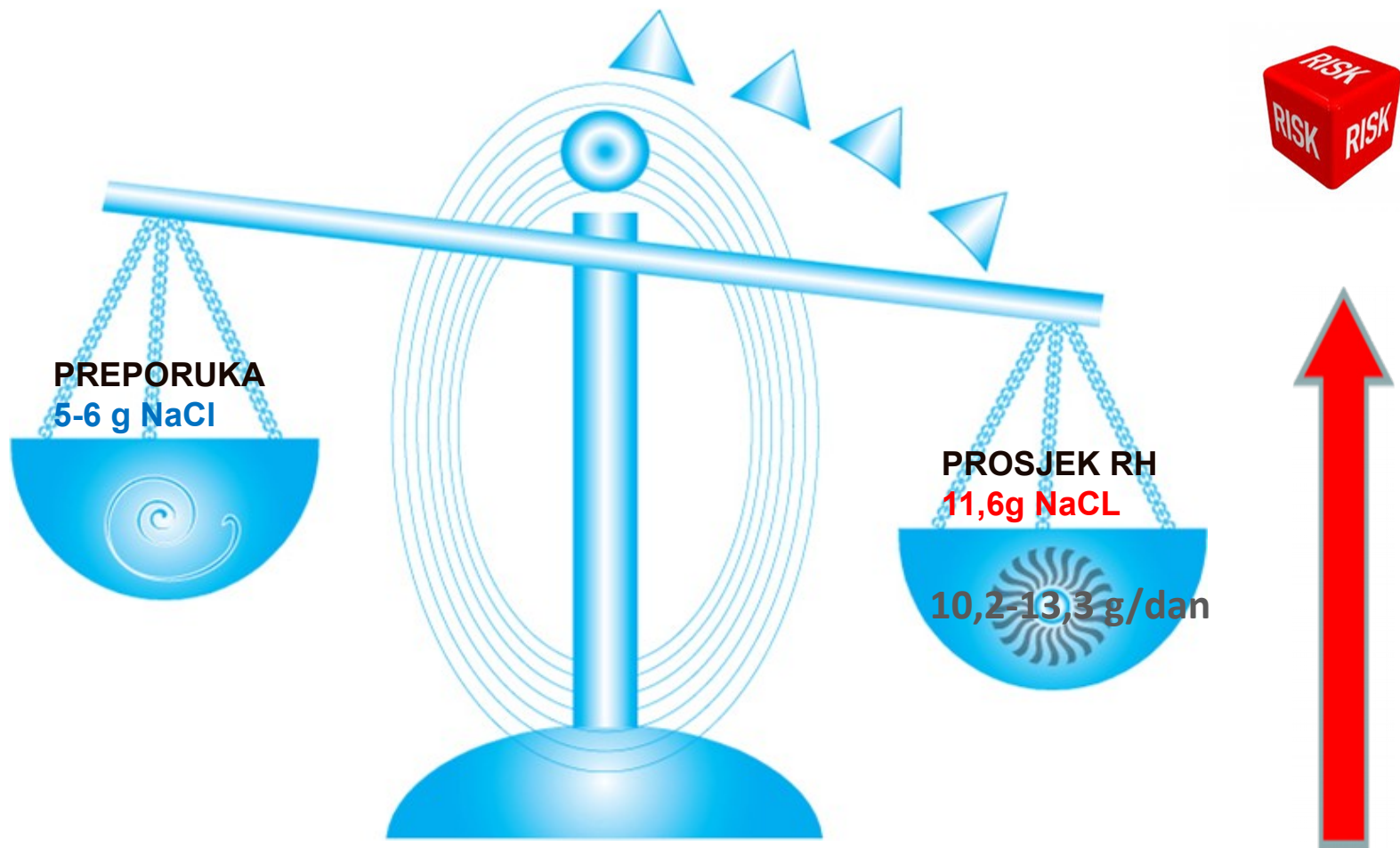
dr.sc. Vedran Poljak dr.med.

doc.dr.sc. Danijela Štimac dr.med.

„Reformulacijom recepture kruha i pekarskih proizvoda do smanjenja prekomjernog unosa kuhinjske soli“



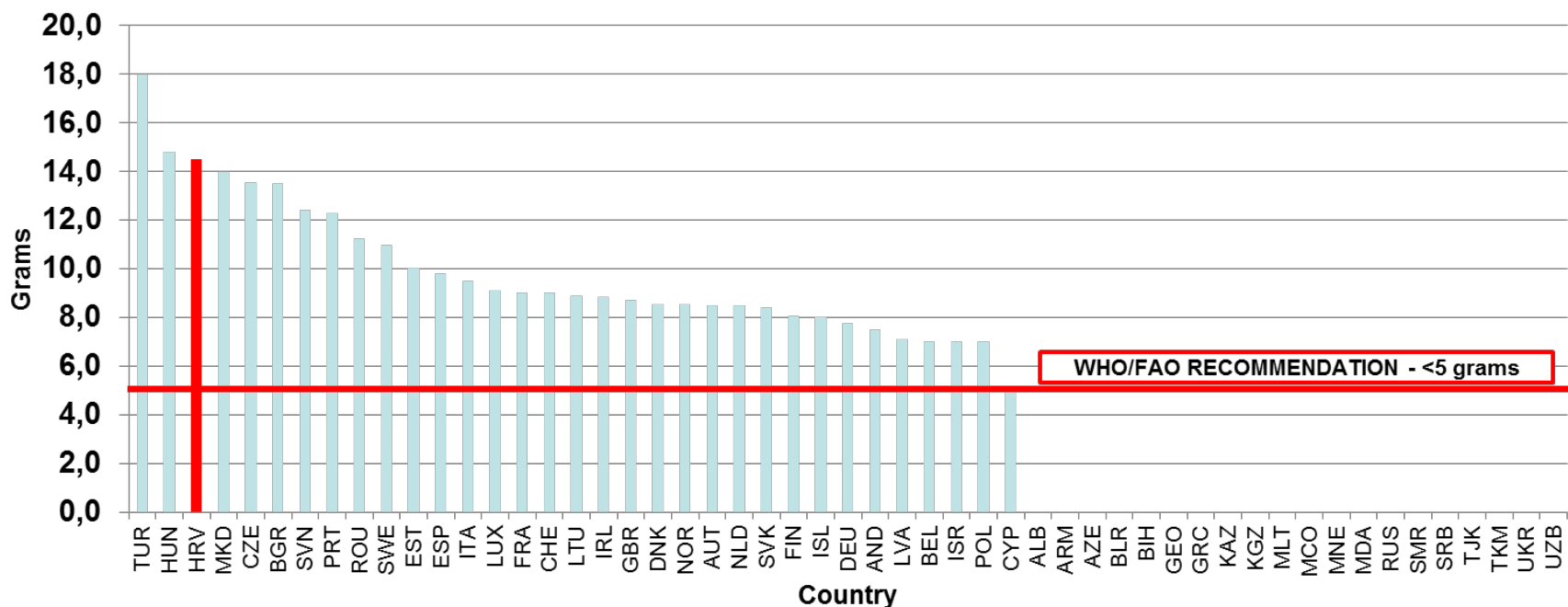
Sol – nacionalni program smanjenja unosa kuhinjske soli



Znanstveno mišljenje o učinku smanjenog unosa kuhinjske soli u prehrani ljudi. HAH, 2014.

Dnevni unos soli po odrasloj osobi u Europskoj regiji WHO – RH 3 mjesto

Salt intake per person per day for adults in the WHO European Region from individual country-based surveys, various years



Ref.: WHO Regionalni europski ured, 2013

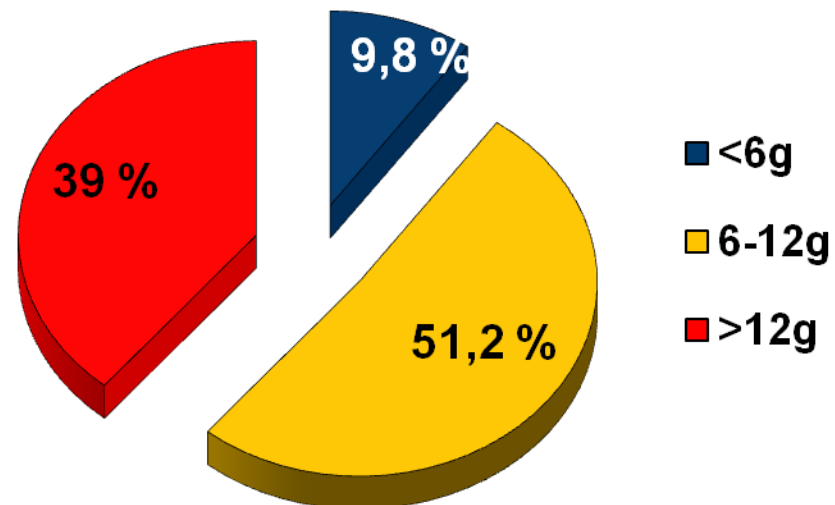
Unos kuhinjske soli u RH

Prosječan dnevni unos **11,6 g***
> **2x preporučenog dnevnog unosa !!!**

Muškarci **13,3 g**
Žene **10,2 g**

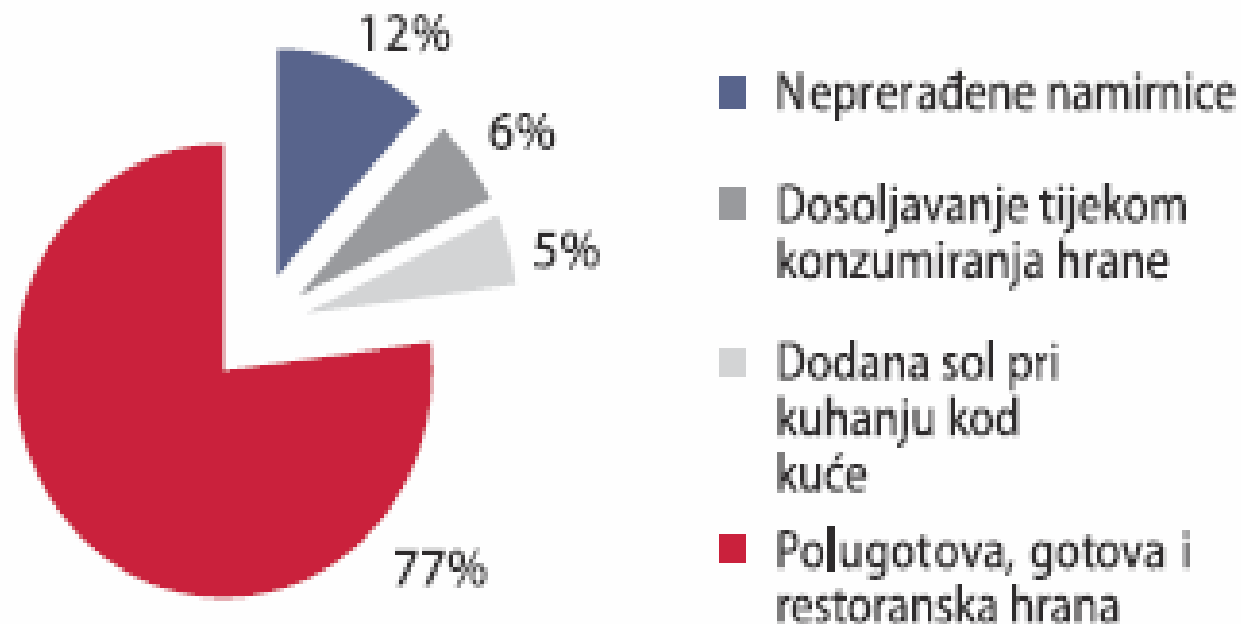
*24 satna natriurija – „zlatni standard“

- konzumacija kuhinjske soli u ruralnoj sredini veća je u odnosu na urbanu
- prednjače istočna i gorska Hrvatska



Koja hrana sadrži kuhinjsku sol?

77% NaCl koju unosimo u organizam je tzv. „**skrivena sol**” u hrani



U kojoj hrani je skrivena kuhinjsku sol (NaCl)?

Skupina namirnica	Udio kuhinjske soli u dnevnom unosu (%)
Kruh i pekarski proizvodi	34
Meso i mesni proizvodi	28
Sir, vrhnje, jaja	10
Riba i riblji proizvodi	7
Mlijeko i mliječni proizvodi	5
Voće i prerađevine	5
Masti, slatkiši i napitci	11



Prehrambene navike – 1/3 djece školske dobi svakodnevno kao međuobrok konzumira neki pekarski proizvod

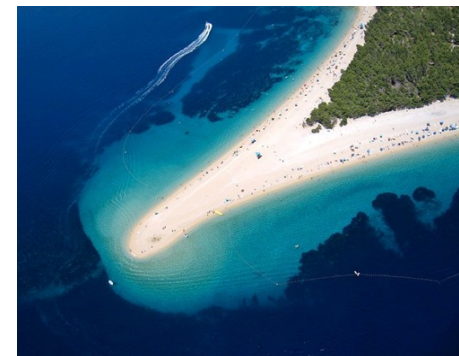




Kriteriji za hranu prema udjelu kuhinjske soli

Visoka razina NaCl (450-500mgNa)

- 1125-1250mg/100g
- >1,12% - 1,25%



Slanost mora 1,5-3,6% NaCl

Srednja razina NaCl (120-450mg Na)

300 – 1125mg NaCl/100g
0,3 – 1,12%



Niska razina NaCl (120 mgNa)

< 300 mgNaCl/100g
< 0,3%

Ref. Te Marae Ora, Cook Islands Ministry of Health, 2012
Ref. DEFRA. PEB Report, 2008

Kruh i peciva (< 250 g)

Kruh:

- pšenični kruh
- kruh od drugih krušnih žitarica
- miješani kruh
- posebne vrste kruha



Drugi pekarski proizvodi

- Štrukli
- Burek
- Savijače ili štrudle
- Grisini
- Mlinci (mlinci s jajima)
- Krafne
- Krušne mrvice
- Krušne kocke



4. međunarodni kongresu FLOUR-BREAD '07 i 6. hrvatski kongres
tehnologa proizvodnje i prerade brašna Brašno-Kruh '07 (Opatija, 24.
– 27. 10. 2007.)

- **2007. RH ~ 2% NaCl u kruhu**

Stručni skup pekara Osijek Hotel „Osijek” 14. – 16.06.2012.

- **2012. RH ~ 1,56% NaCl u kruhu**

2015.

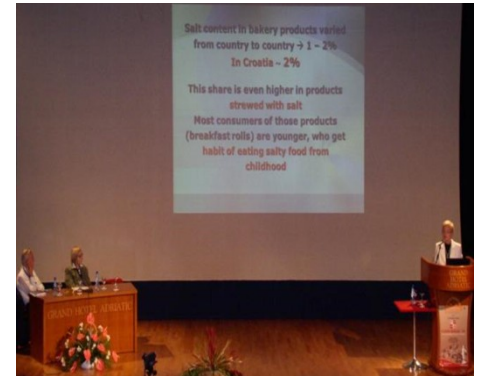
Nacionalna konferencija za smanjenje unosa kuhinjske soli (WHO Sheraton Zagreb 12. i 13. ožujak 2015.)

- **~ 1,53% NaCl u kruhu**

- **~ 2,59% NaCl u pecivima**

- **~ 2,03% NaCl u pekarskim proizvodima**

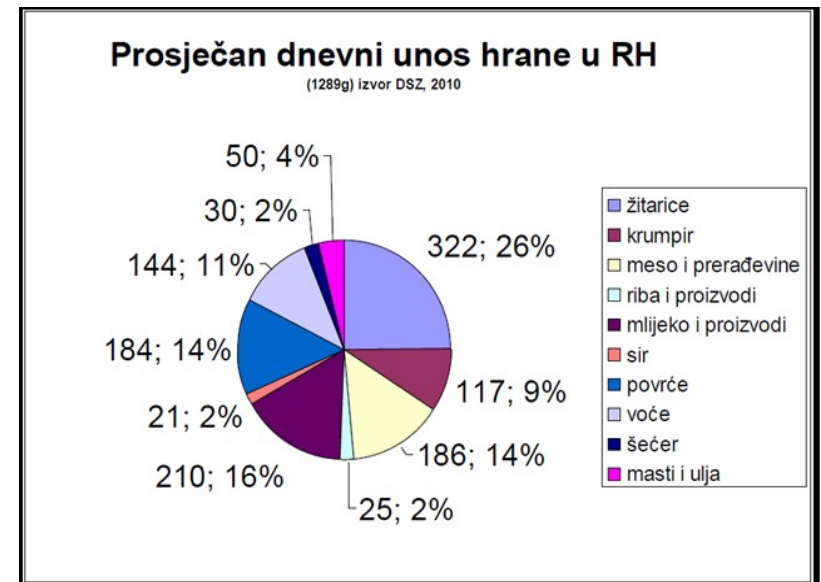
- **~ 522,7 mg Na/100g x 2,542 = 1,32 g NaCl u gotovim smjesama i koncentratima**



Procjena izloženosti

- tri kriške kruha (cca 150 g)u prosjeku sadrže oko $\frac{1}{2}$ preporučenog dnevnog unosa od 5 g NaCl (WHO)

$$150 \times \sim 1,53 = 2,29$$



Sadašnja receptura u EU I RH

Dodatak kuhinjske soli pri proizvodnji pekarskih proizvoda:

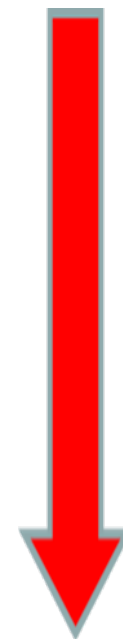
- pojedine zemlje Europe: 1 – 2 %
- Hrvatska: 1 - 2,5 %
- Tradicionalno 20 g soli/kg brašna
- **Gotov proizvod – kruh/peciva**
- **~ 35-42% voda**
- **→ 13 g soli/kg kruha ili 1,3% (oko 5 g Na/ kg kruha)**
- **povećanje NaCl: ponuda pekarskih proizvoda posutih s NaCl?**
- **povećanje NaCl: dodavanje gotovih smjesa i koncentrata bez kalkulacije NaCl?**

Kuhinjska sol u pekarskim proizvodima

- ❖ Radna skupina za implementaciju „Strateškog plana za smanjenje prekomjernog unosa kuhinjske soli u Republici Hrvatskoj 2015.- 2019.”
- ❖ Cilj: postupna redukcija kuhinjske soli u kruhu, pecivima i pekarskim proizvodima za 10 do 25%

Vrsta pekarskih proizvoda	Stanje 2015.	Cilj za 2016. g. g soli / 100 g proizvoda	Cilj za 2018. g. g soli / 100 g proizvoda
Kruh	1,53	1,3	1,1
Peciva	2,59	1,35	1,15
Ostali pekarski proizvodi	2,03	1,5	1,4

- ✓ nemaju utjecaja na tehnološka svojstva tijesta niti kruha
- ✓ navikavanje potrošača na namirnice s manjim udjelom soli je dokazano



Reformulacija recepture kruha

1. faza \Rightarrow za 10% \Rightarrow 1,8 g soli / 100 g brašna (2016.)

18g NaCl po kilogramu brašna

2. faza \Rightarrow za 25% \Rightarrow 1,5 g soli / 100 g brašna 2018/20.

15g NaCl po kilogramu brašna

Barijere i problemi pri reformulaciji

- **Sigurnost proizvoda**
 - kod kruha neupitna
- **Tehnološki proces proizvodnje i kvaliteta –**
< 25% ne utječe
- **Okus –**
 - dobra prilagodba populacije
 - moguće zamjene za NaCl

Reformulacija recepture kruha – tehnološki proces

- istraživanja su pokazala: redukcija kuhinjske soli može iznositi do 25 % bez posljedica za tehnološki proces proizvodnje i kvalitetu kruha

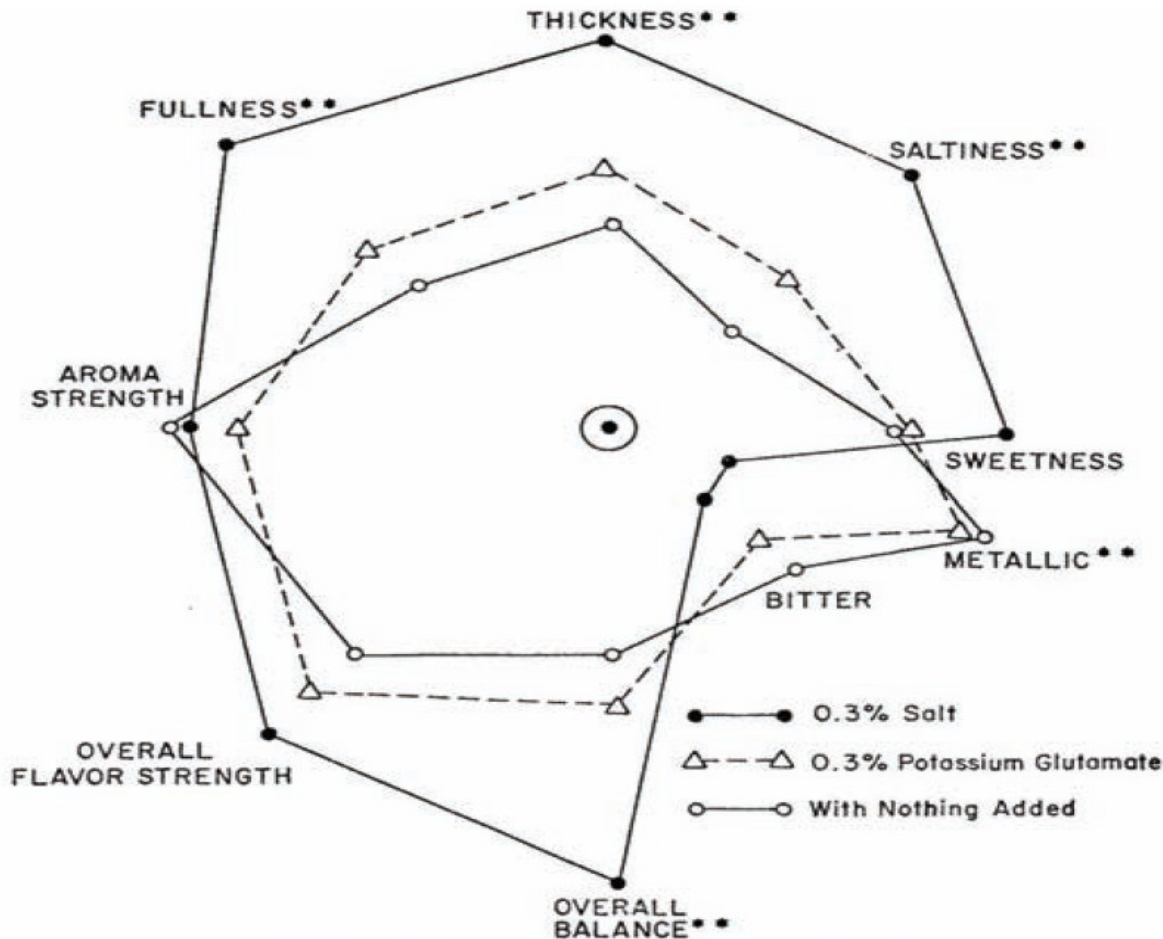
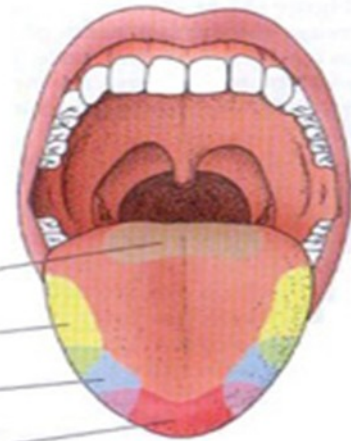
**< 25% NaCl u recepturi kruha
ne
utječe na**

**Razvoj
glutena**

**Reologiju
tijesta**

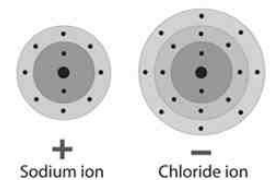
**Brzinu
fermentacije**

Ukupan osjet okusa

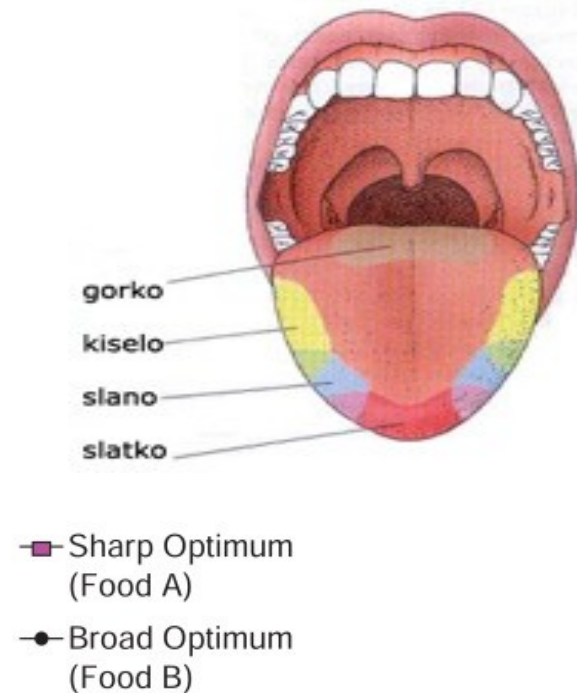
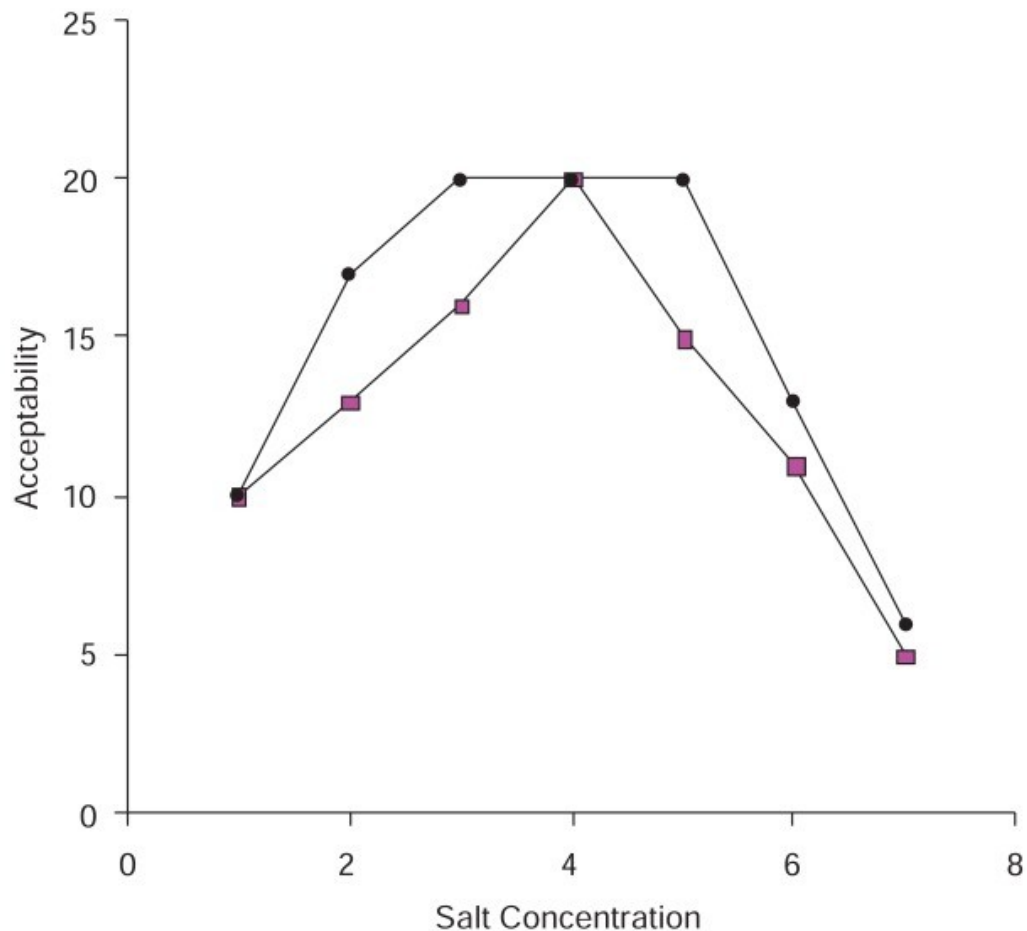


** Statistically significant at the 99% level of confidence.

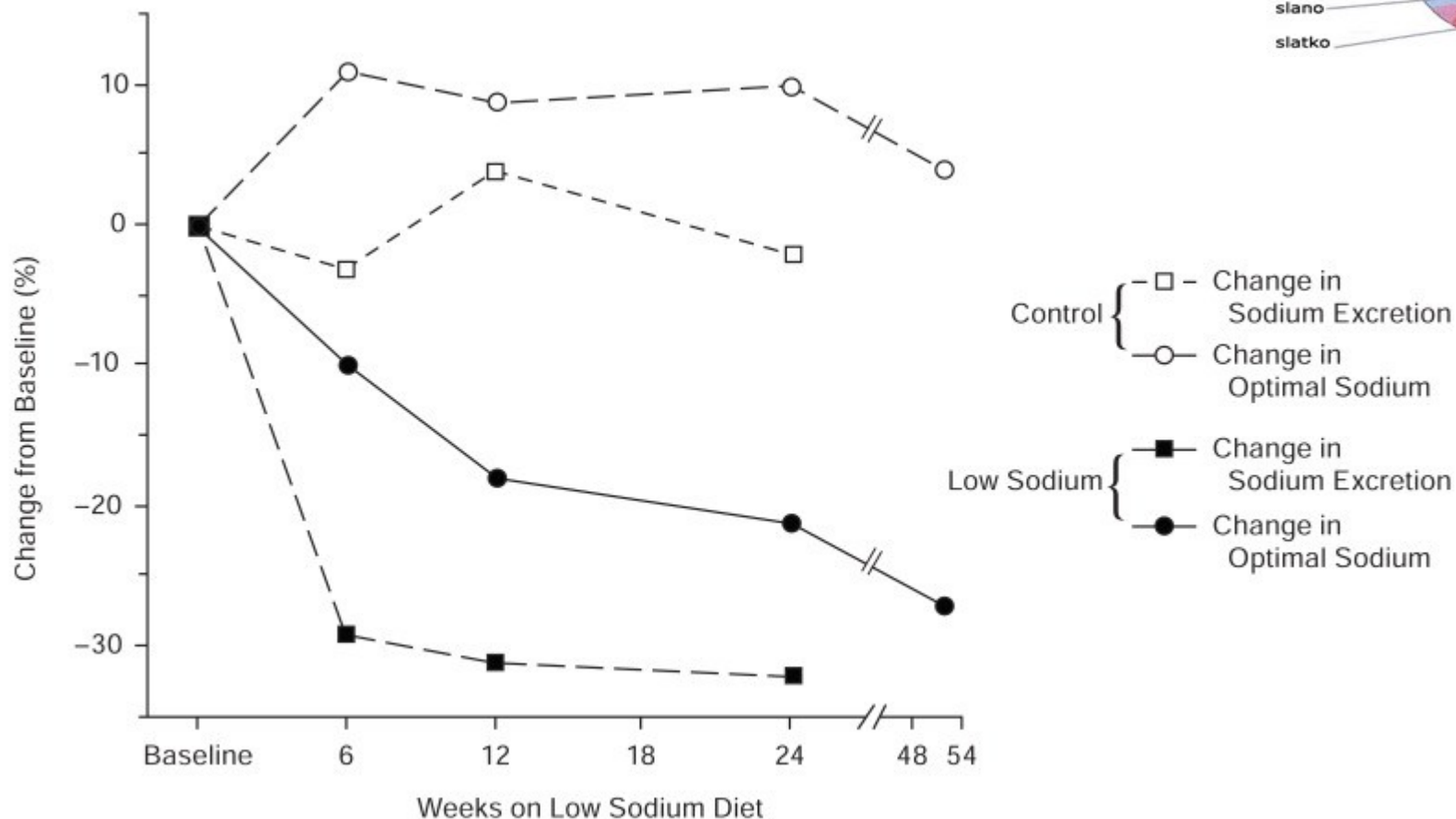
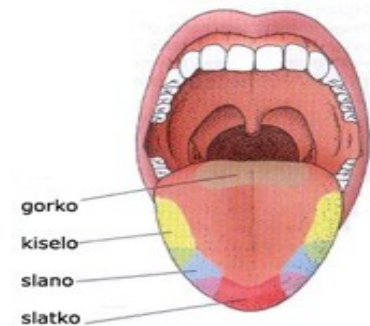
prag osjeta
konc. 0,34%



Prihvatljivi okus (slanog) proizvoda



Prilagodba slanog okusa



Strategies to Reduce Sodium Intake in the United States. Institute of Medicine (US) Committee on Strategies to Reduce Sodium Intake; Henney JE, Taylor CL, Boon CS, editors. Washington (DC): National Academies Press (US); 2010.

Zamjene za NaCl: manje soli – više začinskog bilja



- Bosiljak, lovor
- Curry
- Đumbir
- Kurkuma
- Kajenski papar
- Mažuran,
- Kim
- Ružmarin
- Timijan
- Kadulja

Zamjena za NaCl: KCl?

- Kalijev klorid može biti zamjena za kuhinjsku sol (50 % NaCl zamijenjeno npr. KCl)
- u pekarskim proizvodima → nije potrebno



Zablude i zaključci

- ❑ **Proizvodi s manjim udjelom kuhinjske soli postaju skuplji**

Smanjenje udjela kuhinjske soli u hrani ne povećava cijenu proizvodnje te se primjerenom komunikacijom prema proizvođačima i javnosti može izbjeći pojava podizanja cijene proizvoda.

- ❑ **Hrana s manje kuhinjske soli je manje ukusna i manje sigurna**

- ✓ *u svijetu je već u primjeni cijeli niz tehnoloških postupaka, začina te nadomjestaka koji mogu osigurati isti okus i kvalitetu kruha*
- ✓ *osjet okusa se postupno prilagodi manjoj količini soli – postupnim smanjivanjem NaCl u proizvodima*

- ❑ **Smanjenjem unosa kuhinjske soli smanjuje se potrebna količina joda na populacijskoj razini**

Smanjenjem unosa kuhinjske soli na preporučenih 5 grama dnevno nema bojazni o deficitarnom unosu joda. To je naročito istaknuto u dokumentima SZO gdje se ističe da su kampanje smanjivanja prekomjernog unosa kuhinjske soli i jodiranje komplementarne metode koje povećavaju kvalitetu zdravlja ljudi.

dobrovoljno /mandatorno

Prijedlog : udio soli u pečenom kruhu gotovom za konzumaciju ne smije biti veći od 1,4% (1,4g soli na 100g kruha ili 14g soli na 1 kg kruha)

World Cancer Research Fund International
FOOD POLICY HIGHLIGHTS FROM AROUND THE WORLD
What more could YOU do to promote healthy eating in YOUR COUNTRY?

Nutrition labels + claims

- New Zealand and Australia's health claims standard (2013)**
 - Health claims & nutrition function claims can only be used on foods with a healthier nutrient profile
 - Requires approval for disease risk reduction health claims
- European Union's mandatory nutrition labelling (2011)**
 - Requires a list of nutrient content on most pre-packaged foods
 - Permits voluntary development of front-of-pack nutrition labelling
- Finland's salt warning label (1993)**
 - Explicitly communicated high salt content
 - Encouraged product reformulation through specific salt limits

Food marketing

- South Korea's food advertising restrictions for children (2008)**
 - Bans TV advertising for specific food categories during children's prime time viewing
 - Also restricts gratuitous incentives when advertising children's foods on TV, radio and internet

Taxes + subsidies

- Mexico's sugary drinks tax (2013)**
 - Increase price of sugary drinks by about 10%
 - Application of point-of-purchase simplifies its implementation
- Hungary's public health tax (2012)**
 - Provides incentive for reformulation of selected food products through taxing salt, sugar and caffeine content
 - Effectively increases price at point of purchase of most targeted products
- French Polynesia's tax on sugary products (2002)**
 - Taxes sugary drinks, confectionery, ice cream
 - Between 2002 and 2006, tax revenue went to a preventive health fund; from 2006, 80% has been allocated to the general budget and earmarked for health
- New York City's Health Bucks programme (2005)**
 - Provides direct incentive for low-income people to associate spending to fruits and vegetables
 - Shows potential for scaling up

Public institutions

- New York City's Food Standards (2008)**
 - Apply to about 200 million meals/snacks served by all the city's public institutions, with a clear coordination body
 - Nutrient standards apply to both public procurement and meals
- Slovenia's school nutrition law (2013)**
 - Bans vending machines selling food and drink on school property
 - The ban complements standards and subsidies for school meals, cross-curriculum nutrition education, and a school trust programme

Food supply

- Argentina's salt law (2013)**
 - Sets maximum salt levels for widely consumed foods, including restaurant dishes, with clear penalties for infringement
 - Includes complementary actions to raise awareness
- UK's voluntary salt reduction targets (2006)**
 - Specific targets set for 80 food groups including staples and convenience foods
 - Salt levels reduced in key food products by 25-45%
- South Africa's mandatory salt-reduction targets (2013)**
 - Sets specific targets for salt reduction for 13 food categories
 - Regulation enforced by government
- Denmark's trans fat law (2003)**
 - Bans the sale of products containing trans fats
 - Completes ban facilitates monitoring
- Austria's trans fat regulation (2009)**
 - Sets clear limits on trans fats for different food items
 - Targets producers and retailers
- China's fat content standards (1990s)**
 - Limits fat levels in meat (domestic and imported)
 - Reduces availability of high-fat meats, enforced by meat testing

Supply chain

- Singapore's Healthier Hawker Programme (2011)**
 - Engages food supply chain (e.g. oil manufacturers) to increase availability of healthier vegetable oils to street vendors at lower prices
 - Street vendors using healthier oils can display a 'Healthier Choice' symbol

Public awareness

- Western Australia's Go for 2&5* fruit and vegetable campaign (2002-2005)**
 - A sustained multi-strategy social marketing campaign
 - Clearly communicated, solutions-based, delivered by credible source
- France's National Nutrition & Health Programme: Manger Bouger (2001-present)**
 - Widespread, comprehensive and sustained
 - Applies across settings, including mandatory health messages for all television advertising for processed foods and drinks

The dates provided above represent either the enactment of a law/regulation/rule, or the initiation of a programme. www.wcrf.org



■ Za kraj

□ Dogovor pekarske industrije



- ✓ otvorena za dijalog i prepoznaje prednosti proizvoda sa smanjenim udjelom soli
- ✓ dogovor o smanjenju kuhinjske soli za 10%
- ✓ dostižan cilj – postupno smanjenje unosa NaCl 4% godišnje na populacijskoj razini u RH
- ✓ 11,6 g → 9,3g/dan u RH do 2019. godine