Association between intake of fermented dairy product and diet quality, health beliefs in a representative sample of Polish population

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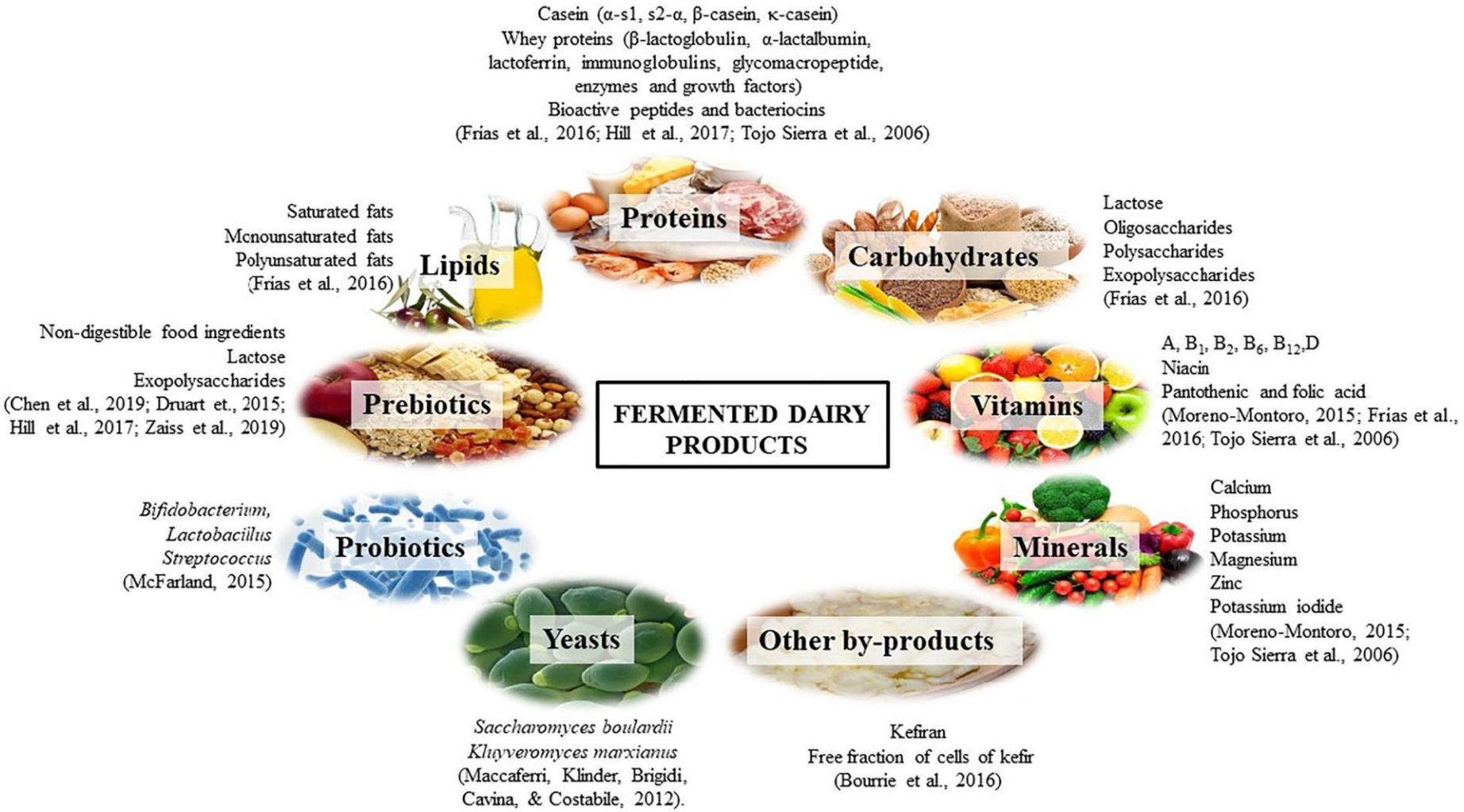
nutrients MDPI

Main components of fermented milks.



María García-Burgoset et al. New perspectives in fermented dairy products and their health relevance. Journal of Functional Foods 2020, 72,104059, https://doi.org/10.1016/j.jff.2020.104059.

Different health benefits of bioactive metabolites present in ethnic fermented dairy products.

Enzymes

- Improve digestibility
- Enhance nutritional profile
- Influence organoleptic properties
- Reduce gastric complications in lactose intolerants

Organic acids

- Improve shelf life of fermented food
- Prevent pathogenes
- Regulate pH in gut

GABA, CLA

- Improves lipid profile
- Prevents CVDs and cancer
- Influences central nervous system
- Regulates mood and appetite

Bile salt hydrolase

- Regulate trigliceride profile
- Exert hupocholesterolemic effect

Vitamins

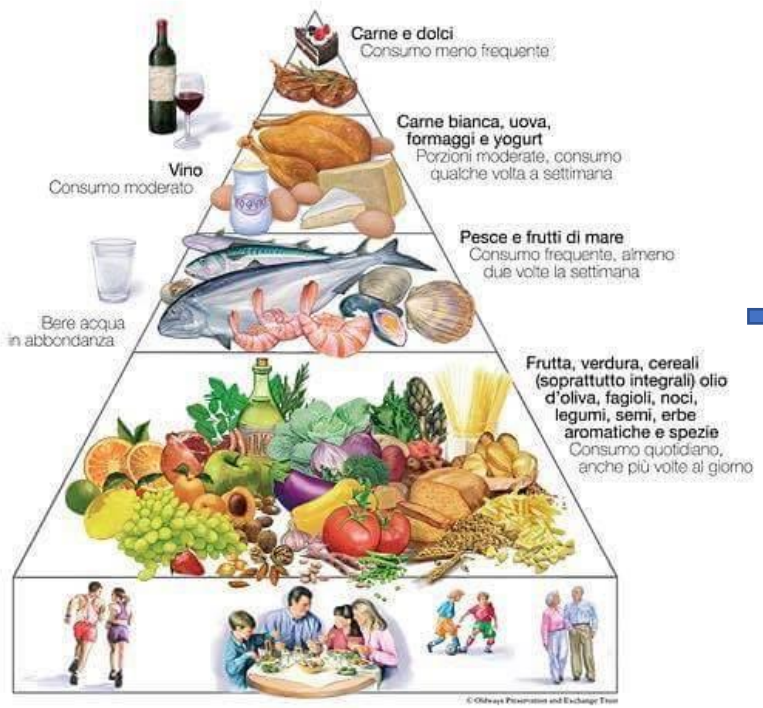
- Strain specyfic metablites
- Enhence folate production
- Increase riboflavin content

Bioactive peptides

- Regulate mineral absorption
- Boost up metabolism
- Improve hypotensive action
- immunomodulation

Ghosh Tamoghna et al. Mechanistic Insights Into Probiotic Properties of Lactic Acid Bacteria Associated With Ethnic Fermented Dairy Products. Frontiers in Microbiology 2019, 10, 502 doi:10.3389/fmicb.2019.00502

Mediterranean diet and fermented dairy products



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- led to significant changes in markers of cardiovascular risk over 8 wk
- may be appropriate for an improvement in cardiovascular risk factors in a population at risk of CVD

Alexandra T Wade, et al. A Mediterranean diet supplemented with dairy foods improves markers of cardiovascular risk: results from the MedDairy randomized controlled trial. *The American Journal of Clinical Nutrition*, 2018, 108(6),1166-82, https://doi.org/10.1093/ajcn/nqy207

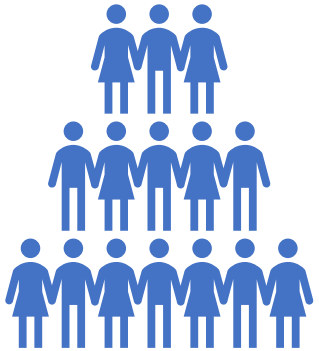
Aim

This study aimed to evaluate the association between diet quality, perception of benefits consumption, and dairy fermented product intake in a representative sample of the Polish population.

Materials

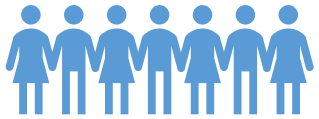
THE SURVEY OF POLES' OPINIONS ON DAIRY PRODUCTS AND THEIR ASPECT OF INNOVATION

General Polish population



Using computer assisted
personal interviews
Jan-Feb 2020

Representative sample
N=2009



Excluded
due to missing-data
N=314

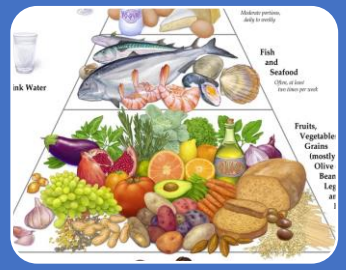
Study sample
N=1695

Questionnaires
8 thematic groups
83 main questions
302 result variables

Methods

DAIRY PRODUCTS CONSUMPTION

- qualitative food frequency questionnaire where questions (basis of the validated KomPAN questionnaire and Codex Alimentarius dairy food grouping)
- Total fermented dairy product consumption = natural + sweetened fermented dairy products + rennet cheeses



MEDITERRANEAN DIET PATTERN

- German version of the Mediterranean Diet Adherence Screener (MEDAS) score
- of 14 questions concerning the consumption of selected food groups

ATTITUDE TO HEALTH

- Health Concern Scale (HCS)
- 10 statements concerning the interest in health and the relationship with excessive consumption of sugar, fat, salt, cholesterol and food additives with the occurrence of selected diseases

Results:

Table 1. Basic characteristics.

	Total fermented dairy products consumption					P
	Q1	Q2	Q3	Q4	Q5	
Fermented dairy product consumption, times/d†	0.2 (0.1; 0.2)	0.4 (0.3; 0.7)	0.8 (0.7; 0.9)	1.2 (1.2; 1.3)	2.1 (1.7; 2.6)	<0.001
Age cohort 19-30 y, years†	26 (23; 28)	26 (23; 29)	27 (24; 29)[a]	26 (22; 28)	25 (21; 28)[a]	0.022
Age cohort 66-75 y, years†	69 (67; 71)	69 (67; 71)	68 (67; 70)	69 (67; 71)	69 (67; 71)	0.310
Gender (women)	48.1 (148)	51.3 (180)	58.7 (186)	53.2 (166)	59.0 (240)	0.015
Waist circumference, cm †	86 (75; 100)	83 (70; 95)	80 (70; 90)[a]	85 (75; 96)	87 (76; 98)[a]	0.016
Body mass index, kg/m^2†	25.5 (22.7; 28.7)	25.2 (22.0; 27.9)	24.8 (22.2; 27.2)	25.5 (23.0; 28.1)	25.1 (22.3; 28.0)	0.132
% Overweight obese	53.7 (123)	51.5 (138)	48.4 (119)	53.3 (119)	50.9 (172)	0.773
Smoking status (current)	20.1 (62)	24.8 (87)	24.3 (77)	23.7 (74)	27.3 (111)	0.290
Physical activity (MVPA)	61.0 (188)	65.8 (231)	68.8 (218)	65.4 (204)	61.2 (249)	0.170
TV watching time (more than 6h)	12.3 (38)	17.4 (61)	16.4 (52)	18.9 (59)	24.3 (99)	0.001
Sleeping time (6-9 h)	79.2 (244)	83.2 (292)	77.9 (247)	76.0 (237)	74.0 (301)	0.034
Economic status (high and very high)	25.0 (77)	28.8 (101)	25.9 (82)	24.4 (76)	28.0 (114)	0.643
Education level (higher)	13.6 (42)	15.1 (53)	18.3 (58)	11.9 (37)	13.0 (53)	0.167

Data are presented as % and number or (where†) median and interquartile range (IQR). The sample size may vary slightly in each variable due to missing data. MVPA, moderate-to-vigorous physical activity. *p* value: significance for Kruskal-Wallis test (Dunn's post-hoc test) or Pearson's chi square test

Table 2. Association between MEDAS, its components and total fermented dairy products consumption.

	Total fermented dairy products consumption					P_{trend}
	Q1	Q2	Q3	Q4	Q5	
MEDAS score	5.6 (5.3; 5.9)	5.8 (5.4; 6.1)	5.7 (5.4; 6.1)	6.0 (5.6; 6.3)	6.2 (5.9; 6.6)	<0.001
Plant oils as main (yes)†	73.1 (225)	83.5 (293)	86.4 (274)	87.2(272)	83.1 (338)	0.096
Plant oils, times/d	1.7 (1.4; 2.0)	1.7 (1.5; 2.0)	2.1 (1.8; 2.4)	2.0 (1.7; 2.3)	2.3 (2; 2.6)	<0.001
Vegetables, times/d	2.7 (2.3; 3.0)	2.6 (2.3; 3.0)	2.5 (2.2; 2.8)	2.6 (2.3; 3.0)	3.1 (2.8; 3.5)	<0.001
Fruits and juices, times/d	4.7 (4.2; 5.3)	5.2 (4.6; 5.8)	5.7 (5.1; 6.3)	5.5 (4.9; 6.1)	5.1 (4.6; 5.7)	0.451
Red meat, times/d	4.8 (4.3; 5.5)	5.1 (4.5; 5.9)	5.2 (4.6; 5.9)	6.0 (5.3; 6.8)	5.6 (5.0; 6.3)	0.168
Butter and cream, times/d	2.6 (2.2; 2.9)	2.5 (2.2; 2.9)	3.1 (2.7; 3.5)	2.6 (2.3; 3.0)	2.9 (2.6; 3.3)	0.084
Sweetened beverages, times/d	4.0 (3.3; 4.8)	5.0 (4.1; 6.0)	4.9 (4.1; 5.8)	4.6 (3.8; 5.6)	4.5 (3.8; 5.4)	0.687
Wine, times/wk	1.4 (1.1; 1.8)	1.6 (1.2; 2.1)	1.4 (1.1; 1.9)	1.9 (1.4; 2.4)	2.5 (2.1; 3.1)	<0.001
Legumes, times/wk	1.2 (1.0; 1.5)	1.4 (1.2; 1.7)	1.7 (1.5; 2.1)	1.7 (1.4; 2.0)	2.0 (1.7; 2.4)	<0.001
Fish and seafood, times/wk	1.3 (1.1; 1.6)	1.6 (1.4; 1.9)	1.7 (1.4; 2.0)	1.9 (1.6; 2.2)	2.1 (1.9; 2.4)	<0.001
Sweets and pastries, times/wk	3.7 (3.2; 4.2)	4.0 (3.5; 4.6)	4.5 (4.0; 5.1)	4.4 (3.8; 5.0)	4.9 (4.4; 5.5)	<0.001
Nuts, times/wk	0.6 (0.4; 0.9)	0.8 (0.5; 1)	1.1 (0.8; 1.4)	1.1 (0.8; 1.5)	1.6 (1.3; 2.1)	<0.001
Preferable white meat (yes)†	71.4 (220)	75.2 (264)	73.2 (232)	79.8 (249)	80.6 (328)	0.014
Whole grain products, times/d	2.5 (2.1; 2.9)	2.5 (2.1; 2.9)	2.6 (2.3; 3.1)	2.7 (2.4; 3.2)	2.6 (2.3; 3.0)	0.179

Data are presented as back-transformed least square means and 95% confidence interval (CI) or (where†) as % and number. The sample size may vary slightly in each variable due to missing data. MEDAS, MEDAS, Mediterranean Diet Adherence Screener. All data adjusted for age cohort, gender, smoking status, sleeping time, TV watching time, education level, economic status (all categorical). *p* value: significance for Wald's test.

Table 3. Association between health concern scale, health beliefs and total fermented dairy products consumption.

	Total fermented dairy products consumption					P_{trend}
	Q1	Q2	Q3	Q4	Q5	
% (n)	18.2 (308)	20.7 (351)	18.7 (317)	18.4 (312)	24.0 (407)	
HCS score†	37.1 (35.3; 39.0)	36.6 (34.8; 38.5)	36.2 (34.4; 38.0)	37.3 (35.5; 39.2)	39.5 (37.7; 41.4)	0.002
Normal body weight	26.3 (81)	29.3 (103)	38.2 (121)	38.8 (121)	39.6 (161)	0.001
Healthy heart	26.6 (82)	32.5 (114)	39.4 (125)	46.2 (144)	52.3 (213)	<0.001
Healthy bones	56.5 (174)	64.7 (227)	71.9 (228)	71.2 (222)	67.6 (275)	0.075
Improved immunity	50.3 (155)	61.3 (215)	67.2 (213)	68.6 (214)	67.3 (274)	0.002
Healthy digestive track	59.1 (182)	63.8 (224)	68.5 (217)	70.8 (221)	61.2 (249)	0.449
Healthy teeth	27.3 (84)	29.3 (103)	37.5 (119)	36.5 (114)	36.9 (150)	<0.001
Not bring benefits	51.6 (195)	37.3 (131)	26.2 (83)	29.2 (91)	20.6 (84)	<0.001

Data are presented as back transformed least square means and 95% confidence interval (CI) or (where†) median and interquartile range (IQR). HCS, health concern scale. All data adjusted for age cohort, gender, smoking status, sleeping time, TV watching time, education level, economic status (all categorical). *p* value: significance for Kruskal-Wallis test (Dunn's post-hoc test) or Pearson's chi square test

Conclusions:

1. Our study identified patterns of health behaviours associated with frequent consumption of fermented products.

2. We observed that the intake of fermented dairy products is associated with
   →better diet quality,
   →consumer self-consciousness,
   →greater attitude to own health.

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