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Centar Izuzetne Vrednosti

u oblasti istraživanja ishrane i metabolizma

Centre of Research Excellence
in Nutrition and Metabolism



DIET ASSES PLAN – DAP platform as a Dietary Assessment Tool

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Richfields WP9 Workshop on Dietary Assessment and Food Matching Tools
Brussels City Centre (BE), Friday 8th April 2016

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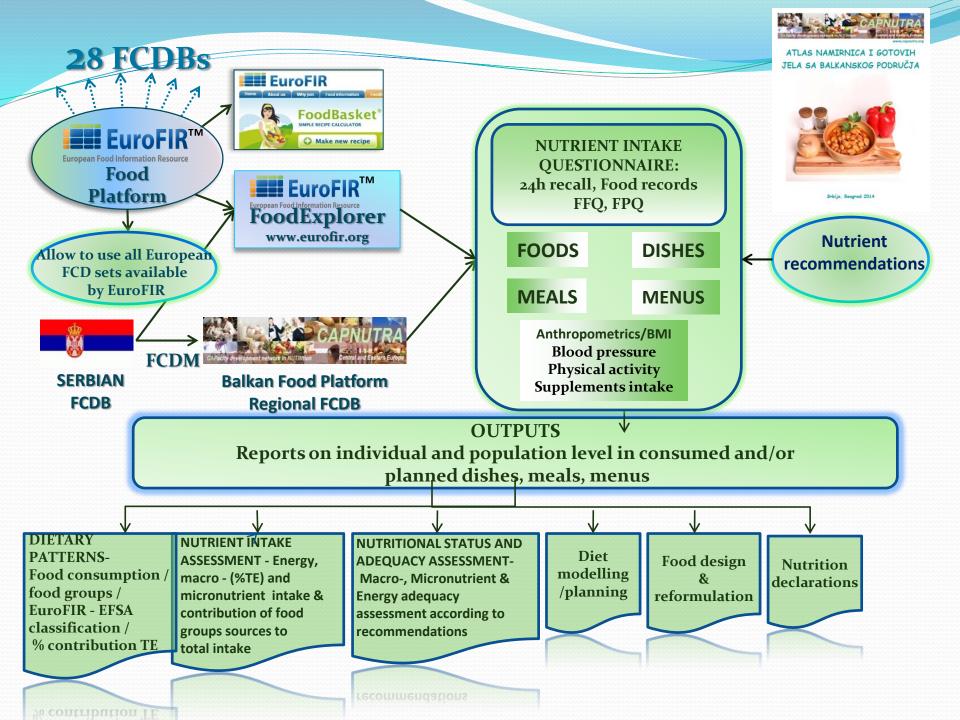
Introduction



- The internationally recognised indicators and harmonized methodological approach are important for the monitoring and evaluation at national/international level.
- Implementation of the commitments of WHO European Food and Nutrition Action Plan 2015-2020 & FAO/WHO International Conference on Nutrition (ICN2) - Rome Declaration through the Framework for Action (FFA) will contribute to ensuring accountability and monitoring progress of global nutrition targets and priority indicators.
- Research infrastructure (RI) and capacity for nutrition data collection and analysis, need to be improved in the region of Central and Eastern Europe (CEE) and Balkan region for the effective nutrition surveillance.

Objective was to design and develop the DIET ASSESS & PLAN (DAP) platform for standardized and harmonized food consumption collection, comprehensive dietary intake assessment and nutrition planning.





Advanced software is designed for data collection from standard food consumption questionnaires

General information about participant:

Age, gender, determinants of SES, illnesses, info about specific diet ect.

Anthropometric parameters, blood pressure measurements, supplements intake

Physical activity



Standard food consumption questionnaires

- ➤ 24-h dietary recalls (24HDR)
- ➤ Food Frequency Questionnaire (FFQ)
- ➤ Food Records
- ➤ Food Propensity Questionnaire (FPQ)
- ➤ Dietary Diversity Questionnaire (DDQ MDD)

Comprehensive calculations, including these datasets, enable broad diet evaluation on both individual and population level



DIET & ASSES PLAN-DAP Interface



EFSA-FoodEx2 FOODGROUP DISTRIBUTION EXPORT EFSA-FoodEx2 FOODGROUP DATA TO XLS

DIET ASSES & PLAN-DAP features:

 DIET ASSESS & PLAN is a nutritional tool - evaluated in EFSA ring trial - which allows extensive diet evaluation.

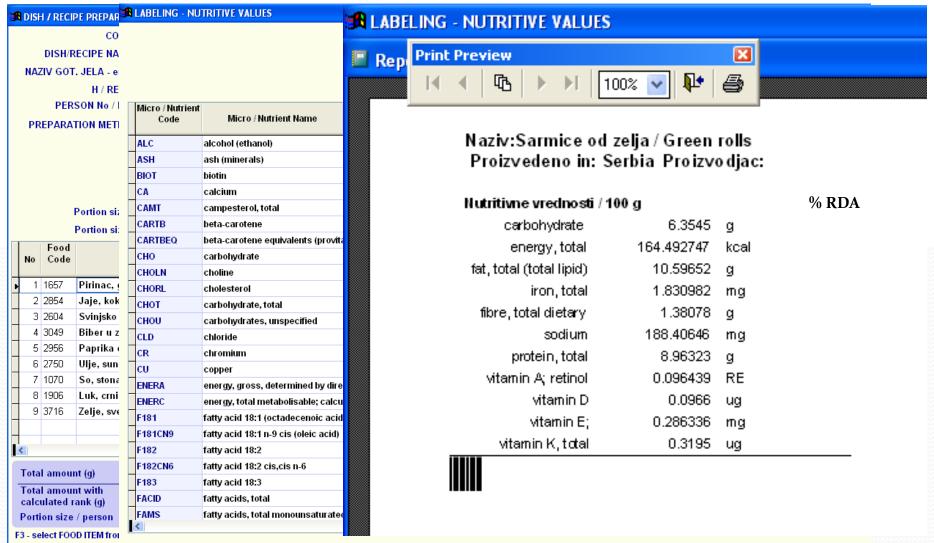


 Unique structure of DAP software enables application of all national Food composition data bases (FCDBs) from the EuroFIR Food Composition Exchange Platform (28 national database – indexed by LanguaL and FoodEX2 coding system, on national and English language, described with photos and portion sizes), including West Balkan Regional and Serbian FCDB.

Diet Assess & PLAN features: 1. Food labeling

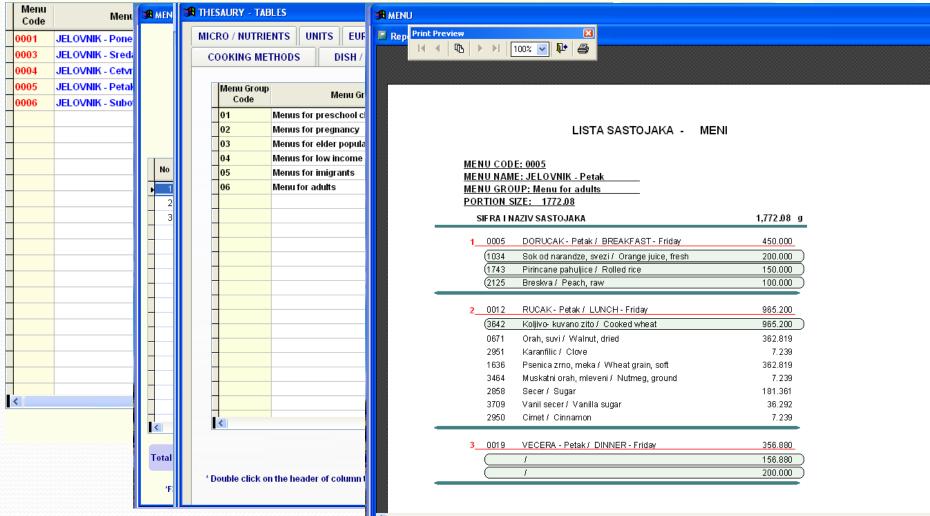
1st step: Choose the food/dish

2nd step: Select nutrients which should be on the label



2. Daily menu planning and long term diet design applicable on specific group (age, gender, SES...)





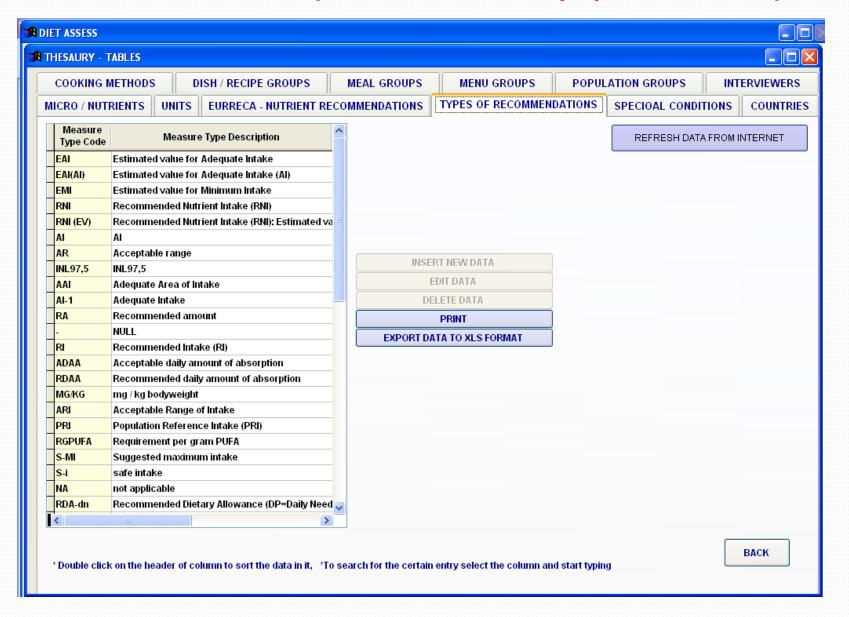
3. Foods design/reformulation

➤What would be the nutrient content of the specific food if the fortification or any other reformulations are applied?

➤What would be the **impact on nutrient intake** — MODELING - PREDICTIONS



4. Nutrient intake adequacy assessment according to selected nutrient recommendations (on individual and population level)



5. A new addition to Serbian FCDM and DAP platform: Minimum Dietary Diversity Indicator - Women (MDD-W)

- Dietary diversity is strongly associated with micronutrient adequacy and is thus an essential element of diet quality.
- Minimum Dietary Diversity Indicator Women (MDD-W) is a dichotomous indicator recognized as adequate for global diet assessment and simple proxy indicator for global use in assessing the micronutrient adequacy of women's diets.
- In order to exclude food groups that were consumed in very small amounts, a 15 g
 (approximately 1 tablespoon) restriction has been introduced and it applies to the
 entire food group for the full day (and not to individual foods within a group)
- A cut off of 5 or more food groups has been established to indicate minimum dietary diversity
- Therefore women who consume foods from at least five out of ten outlined food groups have a higher likelihood of micronutrient adequacy

Minimum Dietary Diversity Indicator - Women (MDD-W)

This indicator is based on 10 food groups (FGI-10R) and will be used for the analyses of 24h recalls from surveys of women of reproductive age

MDD-W food groups					
1. All starchy staple foods	6. Eggs				
2. Beans and peas	7. Vitamin A-rich dark green leafy vegetables				
3. Nuts and seeds	8. Other vitamin A-rich vegetables and fruits				
4. Dairy	9. Other vegetables				
5. Flesh foods	10. Other fruits				

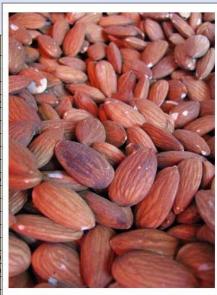
^{*}Vitamin A- rich foods are defined as having >60RAE/100g (based on definition of Codex Alimentarius)

A new addition to Serbian FCDM and DAP: Minimum Dietary Diversity Indicator - Women (MDD-W)

FOODS

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LU		n

European I	ood Information Resource								
CODE	NAME	NAME (ENGLISH)	COUNTRY	MDD GROUP	FOOD GROUP	PIECE WEIGHT		ORI GIN	IEFSA CODE
0018	Badem oljusteni suvi	Almonds, blanched, dried	Serbia	Nuts and seeds	NUT_SEED_OR KERNEL PRODUCT	0.0000	g \	V	Almonds sweet
0049	Bomboni vocni	Fruit candy	Serbia	Not defined	SUGAR_OR_SUGAR PRODUCT	100.0000	g '	V	Candies
0147	Dzem mesani	Jam mixed fruit (average values	Serbia	Other fruits	FRUIT_OR_FRUIT PRODUCT	100.0000	g \	v	Jam, mixed fruit
0250	Jabuka sveza	Apple, whole, raw	Serbia	Other fruits	FRUIT_OR_FRUIT PRODUCT	90.0000	g Y	v	Hen eggs, cooked with
0257	Jabuka-mesnati deo, sveza	Apple, pilled, raw	Serbia	Other fruits	FRUIT_OR_FRUIT PRODUCT	77.0000	g Y	v	Apples (p)
0280	Jaje kokosije-zumance	Egg yolk, hen, raw	Serbia	Eggs	EGG_OR_EGG PRODUCT	100.0000	р	A	Hen egg yolk
0298	Jetrena pasteta	Pate, liver, canned	Serbia	Flesh foods	MEAT_OR_MEAT PRODUCT	100.0000	g /	A	Pate, pork liver
0357	Kim, suvi	Caraway seeds, dried	Serbia	Nuts and seeds	NUT_SEED_OR KERNEL PRODUCT	100.0000	g Y	V	Caraway
0422	Vinjak	Brandy	Serbia	Not defined	BEVERAGE_(NON-MILK)	100.0000	1	v	Brandy
0495	Kukuruzne pahuljice, Kornfleks	Cornflakes	Serbia	All starchy staple foods	GRAIN_OR_GRAIN PRODUCT	100.0000	g \	v	Processed maize-base
0508	Kvasac pekarski, svez	Yeast, bakers, fresh	Serbia	Not defined	MISCELLANEOUS FOOD PRODUCT	100.0000	g \	V	Baking yeast
0518	Liker, prosek	Liqueur, average values	Serbia	Not defined	BEVERAGE_(NON-MILK)	100.0000)	V	Liqueurs
0532	Lesnik, suvi	Hazelnut, dried	Serbia	Nuts and seeds	NUT_SEED_OR KERNEL PRODUCT	50.0000	g Y	v	Hazelnuts
0562	Mango, mesnati deo	Mango, flesh, raw	Serbia	Other Vitamin A-rich vegetables and fruits	FRUIT_OR_FRUIT PRODUCT	66.0000	g \	v	Mango
0633	Mleko kravlje punomasno 3.4%	Milk, cows, whole	Serbia	Dairy	MILK_MILK_PRODUCT OR MILK SUI	100.0000	Ů į	A	Cow milk, whole
0655	Narandza, crvena	Orange, red, raw	Serbia	Other fruits	FRUIT_OR_FRUIT PRODUCT	70.0000	g Y	V	Oranges, sweet, sour (i
0658	Narandza, zuto-narandzasta	Orange,orange-coloured flesh, i	Serbia	Other fruits	FRUIT_OR_FRUIT PRODUCT	65.0000	g Y	v	Oranges, sweet, sour (i
0664	Ogrozd, zreli	Gooseberry, ripe, raw	Serbia	Other fruits	FRUIT_OR_FRUIT PRODUCT	99.0000	g \	v	Gooseberry
0671	Orah, suvi	Walnut, dried	Serbia	Nuts and seeds	NUT_SEED_OR KERNEL PRODUCT	40.0000	g \	V	Walnuts
0689	Paradajz, kecap	Tomato, ketchup	Serbia	Other vegetables	VEGETABLE_OR VEGETABLE PROD	100.0000	g Y	V	Tomato ketchup
0690	Paradajz, sok, kuvan, (konc. 28-309	Tomato juice (conc. 28-30%)	Serbia	Other vegetables	VEGETABLE_OR VEGETABLE PROD	100.0000	1	V	Juice, tomato
0692	Paradajz, sok, kuvan (konc -10%)	Tomato juice, (conc-10%)	Serbia	Other vegetables	VEGETABLE_OR VEGETABLE PROD	100.0000	,	V	Tomato-based cooked
0739	Persun, suseni listovi	Parsley,leaves, dried	Serbia	Not defined	MISCELLANEOUS FOOD PRODUCT	100.0000	g \	V	Parsley
0751	Pivo	Beer, regular	Serbia	Not defined	BEVERAGE_(NON-MILK)	100.0000)	V	Beer, regular
0849	Sampinjon, uzgojeni	Champignon, cultivated	Serbia	Other vegetables	VEGETABLE_OR VEGETABLE PROD	90.0000	g \	V	Common/portobello/ch
0877	Sir, cheddar	Cheese, cheddar	Serbia	Dairy	MILK_MILK_PRODUCT OR MILK SUI	100.0000	g l	A	Cheese, cheddar
1034	Sok od narandze, svezi	Orange juice, fresh	Serbia	Other fruits	FRUIT_OR_FRUIT PRODUCT	100.0000	g	V	Juice, orange
1058	Sok od paradajza	Tomato juice, canned	Serbia	Other vegetables	VEGETABLE_OR VEGETABLE PROD	100.0000	1	٧	Juice, tomato-vegetable
1059	Sok od paradajza, 100% voce (Tako	Tomato juice, 100% fruit (Takov	Serbia	Other vegetables	VEGETABLE OR VEGETABLE PROD	100.0000	g N	v	Juice, tomato



INSERT

EDIT

DELETE

PRIN

SEARCH

STANDARD VOCABULARIES

DATA STATISTICS

DATA BACKUP

6. DAP also supports public food procurement and diet

planning in the public sector settings.

Link with EuroFIR FCDB s

NUTRITION PLANNING

•FOOD DATABASE WITH NUTRIENT VALUES

•RECIPE, MEAL AND MENU CALCULATIONS WITH NECESSARY FOOD ITEM LIST FOR CONSUMERS (AMOUNT, PRICE)

•WAREHOUSE STOCK CONTROL AND FOOD REQUEST (INPUT/OUTPUT)

FOOD PROCUREMENT TENDERS







exact amount of food needed for planed menus



Nutritive values for planned meals and menus

Nutritive recommendations for planned meals and menus

Nutrient intake adequacy assessment



DIET ASSESS & PLAN SOFTWARE (DAP) FEATURES

- 1. General information
- 2. Anthropometric measurements
- 3. Blood pressure
- 4. Physical activity
- 5. Supplements intake

Standard food consumption questionnaires

- 1. 24 h recall
- 2. Food Record
- 3. FFQ
- 4. FPQ

REPORTS on individual and population level

DIETARY PATTERN ANALYSIS NUTRIENT INTAKE ASSESSMENT NUTRIENT ADEQUACY ASSESSMENT DIET
MODELLING
&
PLANNING

FOOD DESIGN &
REFORMULATION

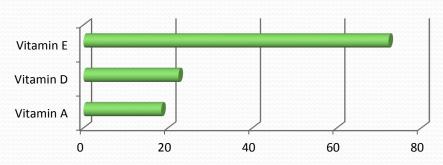
LABELING NUTRITION DECLARATION

Report on individual nutrient intake adequacy assessment according to selected nutrient recommendations

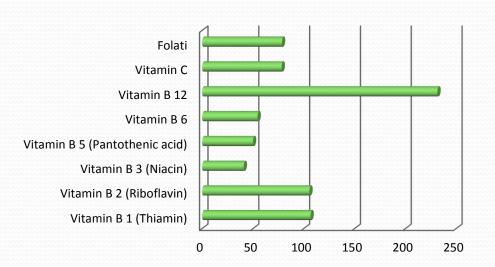
Liposolubile vitamins	UNIT	Daily intake	EAR	% EAR
Vitamin A	μg	92,13	500	18,4
Vitamin D	μg	2,25	10	22,5
Vitamin E	mg	8,67	12	72,3
Watersolubile vitamins	UNIT	Daily intake	EAR	% EAR
Vitamin B 1 (Thiamin)	mg	0,96	0,9	106,7
Vitamin B 2 (Riboflavin)	mg	0,95	0,9	105,6
Vitamin B 3 (Niacin)	NEs	4,50	11	40,9
Vitamin B 5 (Pantothenic acid)	mg	2,5	5	50,0
Vitamin B 6	mg	0,6	1,1	54,5
Vitamin B 12	μg	4,63	2	231,5
Vitamin C	mg	46,92	60	78,2
Folati	μg	251,34	320	78,5
Minerals	UNIT	Daily intake	EAR	% EAR
Cupper	mg	0,38	0,7	54,3
Zinc	mg	5,27	6,8	77,5
Phosphorus	mg	1249,9	580	215,5
Iron	mg	6,16	8,1	76,0
Iodine	μg	73,06	95	76,9
Calcium	mg	446,68	800	55,8
Potassium	mg	2358,97	2625	89,9
Magnesium	mg	181,74	265	68,6
Sodium	mg	1909,48	1600	119,3
Selenium	μg	29,99	45	66,6

Graphical output: % EAR satisfied by daily food intake

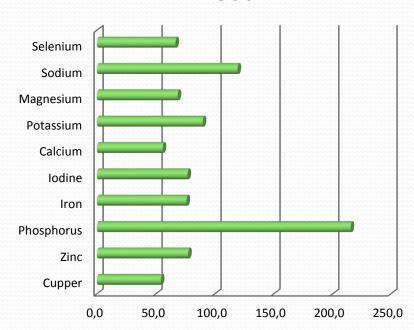
Lipo – solubile vitamins



Water - solubile vitamins



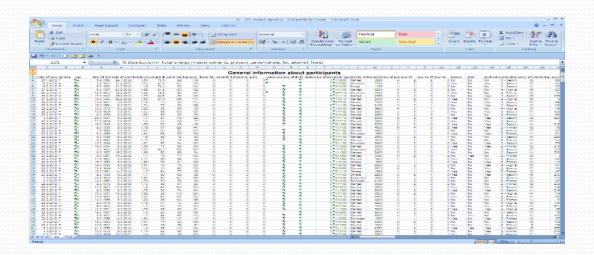
Minerals



Overall report on food and nutrient intake on the population level

➤ Available in xlsx form with more then 150 parameters for each participant

- 1. General info about participant (ID, date of interview, age, gender, determinants of SES, anthropometric measurements etc.)
- 2. Amounts of consumed food by EuroFIR food groups
- 3. MDD indicator
- 4. Nutrient intake (for each questionnaire separately and averaged for all 24 h recall)
- %TE from macronutrients



Summary reports in DIET ASSESS & PLAN

24h FOOD INTAKE QUESTIONN TO TO THE TOTAL PARTY OF THE PA

GENERAL - COMMON DATA

EXAMINEE ID 540 / INTERVIEWER Marija Popović

DATE OF THE INTERVIEW 24.05.2015
DATE OF THE FOOD CONSUMPTION 24.05.2015

NAME Mila

LAST NAME Vasiljevic GENDER Female

DATE OF BIRTH 01.01.1992

email vasiljevicmila92@yahoo.com

LIQUID / WATER COSUMPTION Less than 1 L

ADDITIONAL FOOD SALTING / PEPPER / HERBS / SWEET / FLAVOURING

CONSUMED FOOD ITEMS									
MEAL GROUP	FOOD ITEM - (INGREDIENT)		Port Size	AMOUNT UNIT		AND PLACE ONSUMING	ADDITIONAL ACTIVITY/COMPANY	COMMENT	LEFT FOOD AMOUNT
Breakfast	Jaje, przeno		-	60.00 g	9:00	Kući			
Breakfast	Stisnjena sunka,SL		-	20.00 g	9:00	Kući			
Breakfast	Hleb psenicni beli		-	40.00 g	9:00	Kući			
Breakfast	Jogurt 2.8% mlecne masti		-	200.00 g	9:00	Kući			
Lunch	Hleb psenicni beli		-	80.00 g	15:00	Kući			
Lunch	Pavlaka kisela 12% mlecne masti		-	30.00 g	15:00	Kući			
Lunch	Sok od ananasa		-	250.00 ml	15:00	Kući			
Lunch	punjene tikvice			287.80 g	15:00	Kući			
	*Svinjsko meso, sveze			95.00 g					
	*Pirinac, glazirani			23.75 g					
	*Luk, cmi			14.25 g					
	*Luk, beli			1.90 g					
	*Paprika crvena, mlevena			0.28 g					
	*Dodatak jelima, zacin C			0.28 g					
*So, stona, jodirana				0.28 g					
	*Crni biber, mleveni			0.04 g					
*Tikvice				95.00 g					
*Sok od paradajza				42.75 ml					
Lunch	Pecena paprika			79.99 g	15:00	Kuái			
*Sirce, vinsko				1.56 ml					
*Beli luk u prahu				1.24 g					

Reports in DIET & ASSES PLAN-DAI

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DIET ASSES & PLAN IN NUTRITIONAL RESEARCH AND CAPACITY DEVELOPMENT IN CEE/BALKAN

- Network for Capacity Development in Nutrition in Central and Eastern Europe-CAPNUTRA
- FolOmega "Intake, status and biological action of folate and PUFA: Improvement of Nutrition in Serbia" (No. III 41030), National project of Ministry of Science Republic of Serbia (2011-2015)
- Bilateral project with Slovenia: TRADIFA "Fatty acids profile and trans fatty acids content in traditional food in food composition databases for healthier dietary choices of population" 2014-2015
- BACCHUS- FP7 "Beneficial effects of dietary bioactive peptides and polyphenols on cardiovascular health in humans (BACCHUS) "2012-2016
- CHANCE- FP7 "Low Cost tecHnologies and traditional ingredients for the production of Affordable, Nutritionally correct, Convenient foods enhancing hEalth in population groups at risk of poverty" 2011-2014
- EFSA project "Dietary monitoring tools for risk assessment", 2014 Bilateral project with Croatia: "Folate status in populations at risk: young adult women of reproductive age and elderly" 2011-2013
- YUSAD national study (National study of precursors of atherosclerosis in schoolchildren and adult members), NUTQ - Version1 of DIETASSESS program

Diet Assess & PLAN publications







EFSA supporting publication 2014:EN-607

EXTERNAL SCIENTIFIC REPORT

Dietary Monitoring Tools for Risk Assessment¹

Gavrieli A, Naska A, Konstantinidi Ch, Berry R, Roe M, Harvey L, Finglas P, Glibetic M, Gurinovic M and Trichopoulou A²

On behalf of the project consortium:

The Hellenic Health Foundation, Athens, Greece; Institute of Food Research, Norwich, UK; Institute for Medical Research, Centre of Research Excellence in Nutrition and Metabolism, University of Belgrade, Serbia

Conclusions

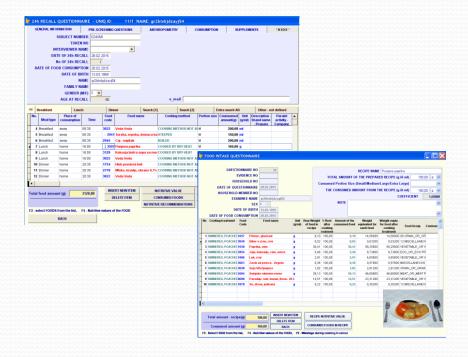
The fundamental challenge in Balkan region is to improve nutrition through implementation of policies and coordinated actions across sectors.

Applying DAP platform underpin the capacity of CEE and Balkan countries for performing dietary surveys, assessment and standardization in public health nutrition, research, survelliance, monitoring and policies implementation.

Food matching in DIET ASSESS & PLAN

structured (harmonized) data protocols

- 24 h and food record questionnaire
 - Row food and recipe (dish)
 evidence examined by researcher



FFQ, FPQ food questionnaire

Row food consumption evidence (prepared questionnaires with "in advance" defined food items and portion sizes)



Food matching in DIET ASSESS & PLAN



Allow to download all FCD sets available by EuroFIR

DietAssess&Plan

Local Database for foods and dishes (compatible with EuroFIR FCDB structure)

24h and food record questionnaire (row foods and dish items)

Experts: semi automated protocol

- aggregating the foods and recipes
- developing search protocols
- linking/matching the foods from the FCDB
- linking (match / update/ create) the recipes in FCDB

Linking attributes (search protocol/s):

- •English food & recipe name
- Original food & recipe name
- Langual and/or FoodEx 2 codes
- •Food & Recipe groups

Reports:
Nutritive values
Consumed foods
Nutrient recommendations

FFQ, FPQ questionnaire (row food items)

- •Automated protocol pre set
- •Experts linking/matching the
- •foods from the FCDB with the questionnaire food items

Linking attributes:

- English food name
- Original food name
- Langual and/or FoodEx 2
- Food group

Reports:

- •Average amount of consumed foods
- Nutritive values