The period from October 2010 to March 2011 did not see any plenary BaSeFood meetings. However, project management had an intense work for the preparation of mid term reporting and review, that took place in Brussels at beginning of January. With respect to previous issues, in which substantial parts were devoted to project’s life, the contents of this Newsletter mainly report R&D and dissemination activities.

**Organisation and training**

Armenian NGO Eco-Globe contributes to BaSeFood research

L. Filippo D’Antuono (UNIBO) and Nune Darbinyan (Eco-Globe)

Geographically, Armenia is not properly a Black Sea area country, but is an integral part of the Black Sea Area Economic organisation, and represents a fundamental part of the European / Caucasian continuum, that is presently at the centre of several international issues.

In two previous issues of BaSeFood Newsletters (issue 2, April 2010, and issue 3, September 2010) the relevance of Armenia in the food picture of the area has been pointed out.

The Armenian environmental NGO Eco-Globe and BaSeFood coordinating institution, University of Bologna, signed a sub-contract in September 2010. Eco-Globe is a non-governmental organisation based in Erevan, the capital of Armenia. This NGO has been established in 2001 and has a mission to promote sustainable development via environmental protection in conjunction with the economic growth.

The NGO is active nationally, regionally and internationally. One of the main objectives is to transfer know-how to the national and local levels. The organization implements many projects, capacity building initiatives, provides consultancy, contributes to the development of legislation and alliances with the partners in many countries worldwide.

The collaboration of Eco-Globe with BaSeFood was initially focused on drawing an overall picture of Armenian plant-based traditional foods, starting from a raw material approach, and to contribute at specific monographs on plant based foods of the area.

In this perspective, documentation activities are in course about traditional wheat crops of Armenia, and will be extended at least to herbs and fruit crops and products. In these activities Eco-Globe will collaborate with local experts and stakeholders. Eco-Globe however also gave a contribution to the experimental part, connected to the characterisation of primitive wheat populations. Four *Triticum dicoccum* seed samples were supplied, and included in an experiment carried out in Italy. A sampling was carried out in a local processing plant in Central Armenia; samples were sent to Italy for analyses and the data are being put together with similar data registered in Italy and Turkey, aimed at the determination of yield and retention factors of some bioactive components in traditional hulled wheat processing.

Additional Food Index Training Course for BaseFood partners from Romania

Marija Djekic Ivankovic, Marija Ranic and Mirjana Gurinovic (IMR)

In the frame of Work package 1 the additional Food Index Training Course for BaseFood was organized for partners from Romania who could not attend the 2009 training session, due to the flu epidemic. The additional training was organized on November 18-19, 2010 in Belgrade at the Institute for Medical Research (IMR) and was hosted by Dr Maria Glibetic and her team. Participants from Romania were Professor Carmen Costea and PhD student Adrian Vasile. During the training session selected traditional foods from Romania (i.e. polenta, nettle soup, plumbs jam, herbal dish, socata, and cabbage leaf rolls with dehydrated plums and apples) were indexed in Langual. Participants were very satisfied with the content of the training and with the applicability of the acquired knowledge. Moreover, the participants faced some challenging questions that were later added by the team to the Lanced dictionary of inquiries (a sort of FAQ), which may be useful for future training.

Analytical determinations on the selected traditional foods

Nutritional composition of BaSeFood samples at National Health Institute Dr. Ricardo Jorge (INSA), Lisbon, Portugal and Institute of Food Research (IFR), Norwich, UK

Ana Sanches Silva, Tânia Gonçalves Albuquerque, Helena Soares Costa (INSA) and Paul Finglas (IFR)

The National Health Institute Dr. Ricardo Jorge (INSA) is responsible for carrying out the nutritional composition of the 33 selected traditional foods within the frame of BaSeFood Project. INSA has received 26 (out of 33) traditional foods from Black Sea Area countries (BSAC). The Institute of Food Research (IFR) has already performed the folate analyses in the samples. Nutrients are the constituents in food that should be supplied to the body in suitable amounts. Among other nutrients, water, protein, fat, minerals, and dietary fibre are being determined in BaSeFood samples, since July 2010. Most of the methods used for nutritional composition are accredited ISO/IEC 17025 and for others the laboratory has successfully participated in Proficiency testing.

Moisture is being determined by gravimetric method, using a dry air oven at 101 °C ± 2 °C for 2 h, until constant weight. Total nitrogen for protein content is being determined by the Kjeldahl method in combination with a copper catalyst using a block digestion system. The protein content was calculated using an appropriate conversion factor.
The Bulgarian selected traditional foods

The selected foods from all the Black Sea Area countries except Bulgaria were presented in the second Newsletter issue. For selected foods the recipes are being accurately documented and registered on site, the flowcharts are being compiled and samples of the fresh foods are being prepared and sent to INSA, Portugal for proximate and nutritional analyses.

The complete list of BaSeFood selected foods can be found in the BaSeFood public website http://www.basefood-fp7.eu/dissemination/public_deliverables/d_1_1_national_country_specific_documented_traditional_foods_files_1

The selected traditional foods of Bulgaria are as follows:

- **Tikvenik**: baked layers of pastry stuffed with pumpkin
- **Rhodopian dried beans soup** (Rodopski fasul): a soup made of dried beans from the Rodopi mountains, and flavoured with herbs
- **Rose jam** (Sladko ot rosi): a jam made of rose petals
- **Sunflower Tahini Halva** (Slanchogledova tahan halva): a sweet paste made from a blend of finely meshed sunflower seeds (tahan) and textured sugar
- **Boza**: a dense beverage obtained from boiled wheat grains subject to lactic fermentation
- **Mursal tea**: an infusion of *Sideritis scardica* flowering tops in hot water.

Total fat is being performed with an acid hydrolysis method followed by extraction using a Soxhlet with petroleum ether, as the extraction solvent. The obtained residue is dried for 1 h 30 min at 101 °C ± 2 °C, until constant weight, according to the acid hydrolysis method.

The determination of fatty acids profile is being carried out after the conversion into their correspondent fatty acids methyl esters (FAME). Preparation of FAME was performed by a combined method of methylation and transesterification (A). Analysis of FAME was performed on gas chromatograph (Agilent 6890 N) coupled with a mass selective (Agilent MS-5975 inert XL) detector (B). Identification of chromatographic peaks was achieved by comparing their retention times with those of a commercial mix standard. Confirmation of the chromatographic peaks was performed by comparison of samples spectra with those of standards from NIST and Wiley spectral libraries.

Total dietary fibre is being determined using an enzymatic–gravimetric method. For mineral and trace elements analyses: Calcium, Magnesium, and Zinc are being determined by flame atomic absorption spectroscopy; potassium by flame photometry; phosphorous by spectrophotometry and for selenium determination, graphite furnace-atomic absorption spectroscopy was used.

Carotenoids are also being analysed in the selected traditional foods due to their importance as bioactive compounds. They play an important role in health by helping to minimize the impact of oxidative damage caused by free radicals. Carotenoids are natural fat-soluble pigments with antioxidant activity. They are responsible for the bright red, orange and yellow colours of many vegetables, and can be a source for vitamin A activity. There are more than 600 known natural carotenoids and they may be classified as carotenols or xanthophylls, which are oxygenated derivatives of carotenes.

Preliminary assays to determine carotenoids in BaSeFood traditional foods were carried out in order to evaluate the best extraction conditions (extraction solvent; volume of solvent; extraction time) as well as chromatographic conditions (four pictures, from left). An Ultra Performance Liquid Chromatography (UPLC®) equipment was used to develop a method which allows the determination of several carotenoids and two vitamins (vitamin A and E) simultaneously (right side picture).
Determining bioactivity of the Black sea area plants and foods

Black Sea area plant food bioactives and endothelial function
Mark Woodcock and Paul Kroon (IFR)

What is endothelial function?
One of the objectives of Work-package 3 is to assess the ability of Black Sea area food plant extracts, and of individual bioactives within these plants, to modulate vascular function. The research at IFR is focussed on establishing the potential for plant extracts and bioactives to affect endothelial function. Endothelial function is a good measure of the ‘healthiness’ of the arteries. Physiological measurement of endothelial function is normally done by measuring flow-mediated dilatation of the brachial artery, in which ultrasound is used to image the lower forearm brachial artery before and after the release of an inflated ischemia-causing cuff applied to the upper forearm. Arteries respond to the blood flow by dilating, and whereas healthy arteries dilate less well and we would consider the arteries as stiffer (less flexible). Poor endothelial function is predictive of cardiovascular disease risk (Libby et al., 2002).

Endothelial function is the result of a balance between vasodilating factors such as nitric oxide which induce arterial smooth muscle relaxation, and vasoconstrictor factors such as endothelin-1 which induce smooth muscle contraction. These factors are produced by the endothelial cells that form the single cell thick layer of cells lining the inside of arteries and veins. Nitric oxide functions as a potent activator of the enzyme guanylic cyclase; this enzyme makes cyclic GMP which is the endogenous signalling molecule that causes smooth muscle to relax.

How will effects on endothelial cell function be assessed?
At IFR, we are measuring vascular endothelial responses in cultured cells. The cells primary human umbilical vein endothelial cells and they are widely used to study the effects of drugs, bioactives, and flow / sheer stress on the endothelium. Nitric oxide bioavailability is a consequence of the balance between the production of nitric oxide by enzymes such as endothelial nitric oxide synthase (eNOS) and processes which increase the rate of breakdown of nitric oxide including the activity of the enzyme NADPH oxidase. The IFR researchers plan to measure the following:

- eNOS protein and mRNA
- Phosphorylated eNOS (phosphorylation activates eNOS -> peNOS)
- Phosphorylation of Akt (=activated Akt) induces activation of eNOS
- Rate of cyclic GMP production
- Endothelin-1 (ET1) protein and mRNA
- NADPH oxidase activity.

What BSAC plants will be assessed?
In Work-package 1, a large quantity of data concerning a large number (>300) traditional foods of the Black Sea area countries was compiled into a report. This information included the recipes and cooking methods, but also some information on the composition in terms of bioactive compounds such as flavonoids, phenolics, glucosinolates, phytosterols, carotenoids, etc. Based on a number of criteria, a priority list of 30 traditional dishes was selected for further study within the project. The IFR researchers used this information and identified plants that were likely to be of particular interest, for example because they are widely consumed, or particularly rich sources of bioactives, or sources of bioactives that were likely to be beneficial for endothelial function. Plants that were not widely consumed in other parts of Europe were given higher priority, as were polyphenol-rich plant because that is the expertise of the IFR Kroon group. The main ingredients were determined using information obtained from partners and systematic internet searches. The bioactive contents of plant ingredients were established based on searches through the literature and the polyphenol database website http://www.phenol-explorer.eu. Eventually, six plant ingredients – pomegranate, kale, dill, nettle, Sideritis and persimmon – were selected for further study at IFR.
Pomegranate: not as widely consumed in other parts of Europe; very high content of polyphenols including ellagitannins and ellagic acid; emerging data of health benefits; significant commercial interest.

Kale: widely consumed in Northern Turkey; high content of polyphenols and glucosinolates. Glucosinolates are highly bioactive anti-cancer agents, and there is increasing interest in their potential cardiovascular protective properties.

Dill: used in a wide variety of BSAC foods. High content of polyphenols especially quercetin glycosides. Dill is used to make a hot water infusion which is called ‘mountain tea’ and is also added to dishes as an herb. Its consumption is typical of BSAC but not elsewhere; high content of polyphenols; wide variety of bioactive compounds including phenylethanoids such as verbascoside, and flavones such as isoscutellarein.

Nettle: consumption of Urtica urens L. (the ‘small nettle’ or ‘annual nettle’) is common in the BSAC but not elsewhere. Nettle is a component of several of the BaSeFood prioritised foods; high content of polyphenols especially quercetin glycosides.

Sideritis: Sideritis scardica is used to make a hot water infusion which is called ‘mountain tea’ and is also added to dishes as an herb. Its consumption is typical of BSAC but not elsewhere; high content of polyphenols; wide variety of bioactive compounds including phenylethanoids such as verbascoside, and flavones such as isoscutellarein.

Persimmon: also called a Sharon fruit. High content of polyphenols, especially flavanols including tannins; Contains a wide variety of bioactives including hydroxycinnamic acids and procyanidins. Not as widely consumed in other parts of Europe.

Currently, the content and composition of polyphenols and glucosinolates in methanolic extracts of these plants are being determined using chemical analytical methods.

Do the major bioactives in these plants cause similar responses to the crude extracts? The main bioactives in the plant extracts are expected to be similar to those that have been described in the literature. A small selection of these will be chosen for use in the nitric oxide bioavailability assays, as an assessment of the bioactivity of pure compounds will go some way as to help explain the effects produced by the extracts. The literature review to determine the bioactive content of the plants to be extracted revealed that kale, nettle and dill, contained high concentrations of the bioactive flavonol quercetin. In these plants, quercetin is present in various glycosidic forms. Kale is a rich source of glucosinolates (e.g. glucobrassicin, sinigrin). Therefore, we will measure the bioactivity of quercetin aglycone, a quercetin glycoside, and a glucosinolate such as glucobrassicin in the assays listed above.

Do the human metabolites of these bioactives have pro-endothelial function activities? When quercetin and its glycosides are consumed, they undergo extensive metabolism before reaching the blood stream. A human intervention study where volunteers were fed onions showed that 3 of the main metabolites produced were quercetin-3‘-sulphate (Q3’S), quercetin-3-glucuronide (Q3GlcA) and isorhamnetin-3-glucuronide (IR3GlcA) in a ratio of 6:3:1 (Mullen et al., 2006).
The quercetin metabolites mentioned above have been previously synthesized in our laboratory (Needs & Kroon, 2006) and we will examine the potential bioactivity of these human metabolites (alongside a quercetin glycoside and quercetin aglycone) with respect to endothelial cell signalling and NO bioavailability.

Glucosinolates themselves have poor bioavailability, but when plant tissue is broken, such as through chewing or slicing, they come into contact with the enzyme myrosinase, and are broken down to form isothiocyanates (ITCs). These are much more readily absorbed in the gastrointestinal tract. As well as this, microbes in the colon have been shown to have thioglucosidase activity, and can also produce ITCs.

Glucosinolate metabolism. ITC - Isothiocyanate

The ITC mentioned above, sulphoraphane, is available to the IFR Kroon group, along with its human metabolites (sulforaphane-glutathione, -cysteine, -N-acetylcysteine conjugates). However its glucosinolate, glucoraphinin, is not very prevalent in kale, so we will use SFN and SFN conjugates to examine how human metabolism affects the activity of an isothiocyanate. The main isothiocyanate in kale is 2-propenyl-glucosinolate which yields allyl-isothiocyanate upon deglycosylation by myrosinase, so this compound will also be tested.

Once completed, we will have collected data that indicates the vascular bioactivity of crude plant extracts, individual food plant bioactive compounds, and of a series of human metabolites of these bioactive compounds. These data will indicate the potential of BSAC food plants and the foods they contain to influence vascular function by modulating the bioavailability of nitric oxide and the secretion of endothelin-1, which control vascular tone.

Literature Cited


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Belgrade researchers start their search for Black Sea area herbs that can thin the blood

Alessandra Konic-Ristic, Dunja Kardum, Filip Stojanovic and Maria Glibetic (IMR)

In March 2011, the IMR team in Belgrade, Serbia started the human intervention study entitled “Effect of traditional dietary plants of Black Sea region on platelet function and other risk factors of cardiovascular disease” (acronym: PLATAN). This followed approval of the study protocol and associated paperwork by the BaSeFood Ethics Committee and by a local ethics committee (Ethical Board of the University Hospital Zemun, Belgrade). According to the protocol, the study consists of three consecutive phases. During the first phase of the study, effects of a single dose of water extracts of selected traditional herbs (nettle, dill and Sideritis scaridica (“mursal tea”) on platelet function (platelet activation, aggregation and conjugation with neutrophils and monocytes) will be investigated in 80 patients with metabolic disease who will be randomly allocated to one of four intervention groups (one of the three plant water extracts or the water control). In addition, during this phase all participants will be screened for platelet hyper-reactivity (based on platelet responses to suboptimal concentrations of agonists). These data will be used to select fifty participants with more reactive platelets for the habitual intervention.

For the second phase, the herbs that will be investigated will be selected from the three tested in the acute study (see images provided). At this stage we are unable to determine the potential effects of consuming the three plant water extracts because the study is being undertaken with blinding in place, so the researchers do not know which treatment has been allocated to each subject. The allocation key, including all patient’s data, is being retained in a locked cabinet by a third party who performed the randomisation until the completion of this phase of the study.

Once the second phase is complete, the data will be evaluated and used to select subjects for the chronic study which is phase 3.

After the approval of the study protocol by the Ethical Board of the University Hospital Zemun, Belgrade, the IMR team started the recruitment of patients with metabolic disease as part of phase 1. The recruitment process includes clinical measurements (blood sugar, cholesterol and triglycerides levels), blood pressure and anthropometric parameters (BMI and waist circumference). After providing informed consent, the subjects were randomly allocated to one of the four treatment groups. A series of measurements were made and blood samples taken before and after consumption of the randomly allocated treatment or control. The blood samples were used to test the effects of a single treatment dose versus control on platelet function and to determine each subject’s platelet hyper-reactivity. To date, 20 subjects have completed the acute phase of the study (see images provided). At this stage we are unable to determine the potential effects of consuming the three plant water extracts because the study is being undertaken with blinding in place, so the researchers do not know which treatment has been allocated to each subject. The allocation key, including all patient’s data, is being retained in a locked cabinet by a third party who performed the randomisation until the completion of this phase of the study.

The most well known anti-platelet drug is aspirin (acetylsalicylic acid).

Black Sea area traditional foods: a valuable source of antioxidants

Francesca Danesi and Alessandra Bordoni (UNIBO)

Plant-based foods, such as vegetables, fruits, and whole grains, contain significant amounts of bioactive phytochemicals. When plant-based foods dietary intake is significant, these compounds have a significant role in the maintenance of human health. Vegetable food bioactive compounds have many relevant biological properties, among which antioxidant activity. The knowledge of total antioxidant capacity of plant foods, which is the cumulative capacity of food components to counteract the inflammatory and anti-oxidative effects of selected extracts, their major bioactives and metabolites in blood cells of healthy people and patients with metabolic disease, and endothelial cells in culture.

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The recruitment process includes clinical measurements (blood sugar, cholesterol and triglycerides levels), blood pressure and anthropometric parameters (BMI and waist circumference). After providing informed consent, the subjects were randomly allocated to one of the four treatment groups. A series of measurements were made and blood samples taken before and after consumption of the randomly allocated treatment or control. The blood samples were used to test the effects of a single treatment dose versus control on platelet function and to determine each subject’s platelet hyper-reactivity. To date, 20 subjects have completed the acute phase of the study (see images provided). At this stage we are unable to determine the potential effects of consuming the three plant water extracts because the study is being undertaken with blinding in place, so the researchers do not know which treatment has been allocated to each subject. The allocation key, including all patient’s data, is being retained in a locked cabinet by a third party who performed the randomisation until the completion of this phase of the study.

The overall purpose of the PLATAN study is to determine the efficacy of selected foods or plant ingredients in terms of their ability to reduce platelet reactivity. When platelets are too reactive, we call them “sticky”. Although platelets need to have some sticky function in order to clot blood (e.g. to prevent bleeding to death when the skin is cut), platelets that are too sticky are likely to cause internal clots (thrombi) and to decrease the stability of atherosclerotic plaques. Thrombus formation reduces blood flow through arteries, and if plaques break up, they can cause heart attacks, strokes and other very serious events. The most well known anti-platelet drug is aspirin (acetylsalicylic acid).

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Our preliminary results evidence that the antioxidant capacity of many analysed traditional foods is very relevant with respect to other vegetable foods and beverages commonly used in the Mediterranean area. For the first time, the antioxidant properties of traditional foods of the Black Sea area were studied. Although in this area these traditional foods are largely consumed with the daily diet, less is known about their overall potential health benefits. The revaluation of traditional foods will be interesting for both consumers, who can discover or rediscover typical dishes, and food industry, that can exploit these scientific data for producing “new” traditional foods.

Nadya Boyko and Mariia Mudryk (UZHNU)

Start of the quantitative pro/antibacterial experiment

Some edible plants, e.g. garlic and onion, are widely known for their antibacterial properties. The idea to investigate the pro- and antibacterial properties of different plant extracts were accomplished by the UzhNU team in the frame of specific BaSeFood task. The quantitative experiments, which examined the influence of the different plant and some traditional dishes extracts on the beneficial and pathogenic bacteria growth, using co-cultivation techniques, were conducted in September-October 2010. During the first stage, the UzhNU team studied 28 extracts and selected few of them, which showed stimulatory and/or inhibitory effects on 26 bacteria. Within the second stage, started in March, 2011, an experiment with extracts able to affect bacterial growth (quantitative analysis) is being carried out. The results of this experiment will be used in the development of a database of in vitro bioactivity data for typical BSAC foods, as well as for functional products development and implementation. The most promising plants/dishes which can be used as functional food are sauerkraut, green and red Georgian plum sauces, cabbage and pumpkin, which show their antibacterial effect on the pathogenic species and stimulatory effects on the beneficial bacteria growth.

Information from Uzhhorod National University, Ukraine

Different ways of sample preparation

The UzhNU team has prepared different kinds of samples for the next following shipping to the partners (FR, INSA and IMR) for the further specific investigations.

Samples with the pomazanka, green borsch, green dill and nettle leaves after the lyophilization procedure. Bottles are covered with hermetic rubber and iron caps for long-term preservation.

Cuvettes for antioxidant testing, at different antioxidant concentration

The well plate with titrated in PBS and BHI plant extracts and control wells

The UzhNU team has prepared different kinds of samples for the next following shipping to the partners (FR, INSA and IMR) for the further specific investigations.

Different types of the samples preparation and packing: freeze dried samples in glass bottles; vacuum-packed freeze dried samples in plastic bags; sun-dried dill and nettle.
A comparison of traditional processing of hulled wheats

Emmer wheat (Triticum turgidum L., subsp. dicoccum (Schrank ex Shubler) Thell) and einkorn wheat (Triticum monococcum L. subsp. monococcum) are the two hulled wheat species being considered in detail within BaSeFood. Einkorn wheat is cultivated in some areas in Turkey, mainly to prepare bulgur. Emmer wheat is still extensively grown in Armenia, as human food. In Italy it is presently a valuable niche product.

Glume removal represents the preliminary, essential step to human consumption of hulled wheat kernels. The traditional process for glume removal is strikingly similar in the three countries. The nature of the final product is affected by the available technology: in fact, traditionally, the glumes are removed by crushing the grain in stone mills; as a result, the resulting main product is broken grain, that is subsequently sorted by sieving. In Italy, where the traditional processing scheme was exactly the same until about 30 years ago, the technology of the process has been recently updated, to respond to an increasing demand for intact grain. As a first step the glumes are removed by means of special machines, that minimize kernel breaking. After this, the kernels are mostly peeled by abrasive discs. Intact grains are more rarely milled, or crushed in a hammer mill, an operation generally reserved to the breakings from glume removal.

An experiment have been carried out to compare the yield of the traditional process, still used in Turkey and Armenia, and the updated procedure, used in Italy. The on-plant sampling were jointly carried out by YEDITEPE and UNIBO in Turkey, August 2010, on einkorn wheat bulgur; by UNIBO in Italy, November 2010 and by ECOGLOBE, with protocols agreed with UNIBO, in Armenia, November 2010, on emmer wheat.

The kale experiments in Italy

Within the experimental activities on kales, several tasks are being carried out.

Characterisation of plant material. As illustrated in other issues of this newsletter (issue 2, April 2010, issue 3, September 2010), kales have being targeted as relevant food plants for research because of their importance in traditional food systems and putative health-promoting properties, connected to their content of specific phytochemical components.
Variability of these characters may exist depending on environmental and genetic factors. A field trial was established in Italy, including 17 local populations: 8 from Italy, 7 from Turkey and 2 from Portugal. The plant material was harvested on December 9, 2010, and prepared for analyses of glucosinolates, phenolics and carotenoids. The same determinations are being carried out on local material, collected on place in several areas during winter 2010.

**The cooking experiments**

Glucosinolates are key components of the Brassica family vegetables, to which kales belong. Glucosinolates are water soluble components, so they can be lost in cooking water.

Cooking can therefore affect in various ways the availability of glucosinolates and their degradation products, some of which are recognized as the major responsible of some potential health promoting properties. It is therefore evident how cooking is a critical step for the valorisation of health promoting properties of kales.

Traditionally kales are used to prepare soups, with cooking time ranging from few minutes, as reported for Portuguese Caldo-verde, to quite long times (the Italian word Ribollita, that is the name of a traditional kale soup, means “re-boiled several times”). The cooking duration adopted in home practice is amply empirical.

Kales are sometimes also used boiled, as side-dishes, so in a form where the cooking water is drained before consumption.

A first experiment on kales has been carried out in Italy, within BaSeFood, including:
- three kale populations (Italian, Turkish and Portuguese)
- two ways of cooking: with water, with vapor
- four cooking times: 5, 10, 15 and 20 minutes.

Preliminary results indicate that almost no leaking occurs when cooking with vapour, whereas up to 30% of plant dry matter is found in the cooking water, when the leaves are boiled. Exact yield factors, and retention factors of glucosinolates, phenolics and carotenoids are being analytically determined.
Nature colour and food colours

The 33 selected foods plus some additional materials are being analysed at UNIBO for antioxidant properties and the content of phenolics substances, connected to these properties. Food extracts show an amazing difference in colour, depending on the main class of phenolics, and other components. Nature diversity is reproduced in foods!

An amazing array of different tahin (oilseed paste) and halva was received at UNIBO from UFT, in the frame of a collaborative experience aimed at characterizing these products, determining bioactive substances retention during processing and shelf life: these were from sunflower, sesame, groundnuts, almond, hazelnuts, walnuts and pumpkin seeds. Also in this case, it is expected that analytical results will reflect colour variation.

Activities in the frame of consumer and stakeholders surveys

A on-line questionnaire

SPES-GEIE, in collaboration with UNIBO, has implemented the questionnaire addressed at surveying the attitude on Italians towards Black Sea area traditional food in an on-line platform. The questionnaire can be found at: [http://www.kwiksurveys.com/online-survey.php?surveyID=HLOMJF_e1d68938](http://www.kwiksurveys.com/online-survey.php?surveyID=HLOMJF_e1d68938)

**Questionnaire submission in course at UzhNU**

The team of the Uzhhorod National University has already started to work on Task 5.1., has translated all Questionnaires and started interviewing the respondents in following locations: in 3 shopping areas, in working and school area (respondents working in insurance company, business owners, hospital and bank staff, students of the medical department) and on the street on the Wine festival in Mukachevo, Ukraine (13-14 January 2011). Consumers’ questionnaire compilation on the street fair “The red wine”, Mukachevo, Ukraine, (13 January 2011) and in the city supermarket “Dastor”, Uzhhorod (5 January 2011), by Nelya Koval, UzhNU.

**A collaboration to questionnaire submission to migrant communities in Italy**

Olha Ivaniv was born in Cernivtsi, Western Ukraine and is presently living in Cesena, Italy. She graduated with honours at the Ivan Franko state University in L’viv, in foreign literatures and languages, with specialisation in English language and literature. She has been lecturer of English language at the same University from 2002 to 2007. While in Italy, she took a master degree in foreign languages and literatures at the University of Bologna. Presently she is collaborating with BaSeFood in the administration and processing of questionnaires to the Ukrainian communities of the Emilia Romagna region.
BaSeFood dissemination

A contribution about garlic and its uses in Romanian cuisine

Garlic is one of the most largely employed culinary plants, worldwide. It also has important putative health-promoting properties. Prof. Stroia and colleagues from ASE released an interesting contribution about the use of garlic in Romanian cuisine. The entire material is available at the Foods Plants and People section of the BaSeFood web site. Foods, plants and people contains reports about all aspects of plant foods and edible plants.

This section presently contains three contributions:

- Hullled wheats: a coming back within BaSeFood.
- Plums: versatile fruits for traditional foods.
- Garlic sauce.

A new project in the area of traditional foods

Antonietta Branni (SPES-GEIE)

In September 2010 a new European project started. AFTER project (African Food Tradition Revisited by Research) involves seven African countries: Benin, Cameroon, Egypt, Madagascar, Senegal, Ghana and South Africa and four EU countries:

- France
- Portugal
- Italy
- United Kingdom

SPES-GEIE is participating for Italy.

In AFTER project, ten traditional products, which represent three main categories of products are studied: Fermented cereal-based products (Akpan, Gowe, Kenkey, Kishk Sa’eed), Fermented salted fish and meat (Lanhouin, Kifoza, Kong), Traditional plant based extracts for functional foods (Bissap, Buy, Jaabi). By generating and sharing knowledge on food technology AFTER intends, for each product group, to improve, develop and create a product or a technology representing an interest shared between European and African food companies.

The evident common background of BaSeFood and AFTER may suggest the seek for future networks in the area of traditional foods and local food resources.

Presentation at the 6th European forum “Let’s Liberate Diversity!”

Mariam Jorjadze, Elene Shatberashvili (ELKANA)


The “Let’s Liberate Diversity!” forums are the annual gatherings of farmers’ organizations and associations working on agricultural biodiversity in Europe. The forum is organized by European Coordination on Farmers’ Seeds, which is a European network committed to the conservation and renewal of crop biodiversity in farms and gardens. This year the central themes of the Forum were Farmers’ Rights and on farm conservation, development and sustainable use of agricultural biodiversity (for more information please visit: http://www.liberate-diversity-hungary2011.org).

In the frame of the forum several workshops were conducted on the problems like: collective management of agricultural biodiversity on farms and in gardens, seed legislation in the European Union, animal biodiversity, wheat and bread traditions etc.; Also poster exhibition of the activities of the participating organizations, a seed exchange and an exhibition of local apple varieties took place.

In the frame of the Poster Exhibition, Association Elkana presented its work regarding on farm conservation of the local wheat varieties, as well as public awareness and promotional campaigns for the promotion of traditional bread baked from Tsiteli Doli variety. Besides this the poster presented the core activities of the BaSeFood project, including the on-going laboratory studies conducted by BaseFood partner organizations on Tsiteli Doli bread.

In the frame of the workshop – “Restoring Our Heritage of Wheat and Bread Traditions” Elkana representative Elene Shatberashvili made a presentation on Elkana agricultural biodiversity conservation activities as well as on-going research on traditional foods in the frame of the BaSeFood Project. It should be mentioned that BaSeFood Project activities gained the interest of the workshop participants from various countries of the European Union (farmers, gardeners, seed artisans, bakers and processors of products derived from agricultural biodiversity, civil society organizations, researchers, breeders and representatives of gene banks) and some asked additional questions on the project implementation and outcomes so far. The workshop aimed to build a network and share the knowledge and skills for conservation, exchange and restoration of the landrace grains, and traditions of baking, culinary arts, seasonal grain festivals and folk arts.
Keeping the faith in education

Note from the project management and coordination

This contribution was received from ASE, as a witnessing of the concepts and involvement underlying a book published by ASE. The book is freely available, so this piece by no way can be considered an advertisement, nor have any commercial implication.

Simona Buo and Carmen Costea (ASE)

Before being a European project, BaseFOOD represents a great asset and opportunity for both members and the other potential participants, especially the youngest ones. Getting closer to such research they become aware of their own capabilities of self development and the market opportunities helping to set up a better connection with the Society. Eighteen months of hard work within the project topics gave us, periodically the opening to get together with students and stakeholders, with academics and business people in our familiar, by now, idea-shops. It is there we love cooking not only the prized BCAS foods but our development together as the traditional food can’t be analyzed beyond searching and celebrating traditions, knowing the historical meanings and pass them to the youngest of us. The book keep learning represents the core of our workshops of the first half of the practical research display, a book wrote in Romanian, by the members of BaSeFood together with our students who never missed any of our meetings.

Coordinated with dedication by Professors Carmen Costea and Alexandru Stroia the book edited by the ASE Publishing House proved itself the chance to visit the lands and after every encounter with the divine essence contained in all these, young people have found themselves more fulfilled, richer, cleaner, wiser.

The recipes were many, because the traditional Romanian cuisine is a treasure of flavors. But the real gain is to enrich young participant people with pieces of Romanian soul, discovered during the project. After each infusion of authentic tradition, after each spiritual journey in the orchard, in the garden of vegetables, or in the kitchen with aromatic herbs, but also in visited monasteries, after each bath in the clear water of the pure love for our ancestral lands and after every encounter with the divine essence contained in all these, young people have found themselves more fulfilled, richer, cleaner, wiser.

We find in the book, as said in the preface by the coordinator, a succession of stories, memories, knowledge, feelings shared with others, and last but not least, delicious and healthy recipes. We find in the book, as said in the preface by the coordinator, a succession of lessons learned directly from life, for the lessons ‘must be first lived, in order to be understood.’ Pieces of folklore - verses of Romanian folk songs filled with spirit - thoughts and lyrics, essays about tradition in Romania, all reflect the activities from the “ideashops” born from souls and managed with passion - where participants have learned by doing several things, all in the BaSeFood project: in the rush of nowadays global area in which we all are caught up with better or less good issues, defining, cultivation and preservation of national identity is certainly a goal. If we forget the past, if the nationality is forgotten or ignored, the European Union can’t be built as its roots are national roots uniquely developed together, in the same garden. No roots, no purpose policy can easily transform us into an amorphous mass, sad and vulnerable population, forgetting to remain people. We need to keep ourselves reunited by roots, traditions and national diversity, to better know, honor, appreciate and preserve both the local assets and the European values. For the world natural order sake we need to never forget our belonging, our soul’s treasures as spiritual rings, closely placed side by side, as in the secular tree stems. We carry through life these rings, each loaded with the spiritual messages of our ancestors. It is our duty to keep alive the light that shows the path and this project is a step towards this goal and a guiding torch. The authors of the book “Learn everything” managed to convey some of the riches of spiritual essence gathered in the workshops. Thus, after a preface that refers to the very essence of the project, we are carried to the lands of Moldova and Bucovina, though the multicultural Danube Delta, both so young and so old at the same time, through the bold Oltenia, we dress in Romanian shirts, adorned with traditional stitches, we feel and learn some of what the students, traveling through the regions filled with Romanian culture and tradition, felt and learned.

For these young people dressed in Romanian costumes, met the peasants at home, in the country side, picked herbs from the garden and fruits from the orchard, mixed with a wooden spoon the big pot put over the fire in the yard to make “maguin”, walked on the fresh grass and felt God and the Romanian, Ukrainian soles in all this simple things, that we managed to keep clean and healthy, that were carefully preserved in some areas of Romania that remained, magically, untouched. These “points of view” that form the first part of the book are some gems from the great chain of lessons lived and learned by the participants to the project BaSeFood.

The second part of the book refers to Romanian culinary traditions, to the wisdom contained in them, and to the fact that the food habits of our ancestors were formed through the experience gathered by generations of people, which is why traditional recipes are all delicious lessons about how to stay healthy. Surely cooking these recipes represent lessons of health for the young people threatened by the aggressive culture of the fast-food.

ASE Publishing House has succeeded, we believe, to emphasize the spiritual essence contained in this book, essence resulting from years of exercises and facts of love, harmony, knowledge, faith and work, not necessarily in this order that constituted BaSeFood project. Speaking mainly about fastening dishes, the Easter time will be the precious moment to offer the book, or tree, to other young people, and contribute to their cultural and spiritual enrichment. Such dissemination is an appropriate joy of the coming spring, a deep fulfillment for those who are going on to work with passion, with skill and high devotion to the BaSeFood project.
Dissemination events

- **Finglas P.** Recent achievements in Europe through EuroFIR and BaSeFood projects. Project overview. International scientific symposium: Biodiversity and Sustainable Diets, November 3-5, 2010. FAO Rome, Italy.
- **Costa H.S., Albuquerque T.G., Sanches-Silva A.** Comparison of fatty acids profile and total fat content in five types of oilseeds. 8th Euro Fed Lipid Congress, November 21-24, 2010, Munich, Germany.
- **Mudryk M., Bugyna L.** Quality of the plant-originated traditional food products. The 64th students’ and young scientists’ conference “Actual problems of the modern medicine”,

Seminars carried out by ASE in Romania

- **5-17 October 2010** Fall traditional dishes in the Carpathian cuisine. Simon, Bran Cluster workshop participants: researchers, facilitators in disseminating food recipes, general public Romanian traditional foods keeping and producing
- **June 11-13, 2010** Spiritualization of Health through Tradition, Love and Knowledge. Braditel, Piatra Neamt, Romania. Workshop Participants: food scientists, social science scientists, general public. Project’s overview, Romanian traditional foods
- **April 30-May 2, 2010** Tradition, Health, Responsibility Hobana, Gureni, Tg. Jiu Romania. Itinerant Cluster workshop for traditional recipes recording and networking with stakeholders and facilitators. Presentations Applications stakeholders, producers, consumers, traditions keepers. Project’s overview, Romanian traditional foods
- **Every Thursday of April 2010** Business Club - Branding Romania through its culinary habits. Bucharest, Romania. Training Idelier. Project team, researchers, students. Changing into good the local consumption habits. Project’s overview, Romanian traditional foods
- **December 10-17, 2009** Bridging Spirituality and Health from Traditional Cuisine during Christmas Fasting. Bucharest, Romania. Workshop Food scientist, social science scientists, general public. Project’s overview, Romanian traditional foods.