SURE AS EGGS IS EGGS?

FOOD AND NUTRITION

The quality of food is not limited to the dimension of health. It includes other, e.g. sociologic, and ecologic aspects. Each individual buying-decision supports a specific way of production with negative or positive effects on the environment, and also endorses social or unsocial work conditions for the producers (example: "fair trade with the 3rd World").

For this reason, shopping for food represents always, consciously or unconsciously, an action which bears consequences on health, and on ecologic and political circumstances.

This module follows the objective of making consumers aware of ways in which they can exert influence on their own health, the market, and their environment.

1. Subject-specific information

1.1 The quality of food

Sure eggs is eggs?

When we stand in front of a shelf with vegetables or want to choose the right noodles we do not want to receive just "anything" for our patience and for our stomach, we want to get "real" quality.

But what is "real quality"?

How can we know which of several similar products is of better quality?

What is "real quality"?

The demands pressed on the quality of food have changed in the course of time. Up to the middle of the past century the supply of energy and the shelf life of food items were the most important criteria consumers cared for.

Today the demand for finished and half-finished products is stronger than ever before, and frozen dishes and instant products are a standard solution for many kitchens. The offer increases constantly, - from salads which are ready to serve to pre-baked omelettes and a large variety of other products. This development creates the need for an abundance of additives which increase durability, simplify processing, enhance flavour, and influence the quality.

As a reaction there is also a trend for food which is free of dangerous substances and unaltered, - food of biologic production, short: bio-food.

According to "Koerber, Männle, Leitzmann (1994) Vollwert-Ernährung" the quality of food is not only defined by the sum of substances it contains, but depends on many different features and characteristics.

The rating of the different qualities depends on the respective lobby. For producers and commerce economic value stands in the foreground. Consumers care for taste and quality.

1.1.1 Different aspects regarding food-quality [44]

- **Value of suitability**

for the consumer, suitability

- **Value of enjoyment**

This is a sensorial value which is very important from the consumer's viewpoint. It is related to looks, smell, taste, consistency, and temperature.

◆ **Psychological value**

Hunger is not the only reason which makes us eat. We also eat because we enjoy food, want to give ourselves a sweet treat, and because we are tempted by enticing publicity. Eating can also represent a substitute for other needs which we can not satisfy (eating because of frustration).

◆ **Health-value**

The health-value of a product depends not only on how well it satisfies hunger, or how good it tastes, but primarily on its ingredients. The effects of the principal nutrients (carbohydrates, proteins, fat) are well-known. But there is also a great diversity of other bio-active substances which still need to be examined in detail.

The health-value of food further depends on the following components:

- ❍ healthful ingredients
- ❍ essential (vital) ingredients
- ❍ energy
- ❍ foreign substances and pollutants
- ❍ pathologic germs
- ❍ digestibility
- ❍ cultivation (is bio-quality available?)

◆ **Socio-cultural value**

Eating fulfils not only the purpose of nutrition, but is also a social event. Certain meals and food items are symbols of prestige (e.g. seafood, caviar, exotic fruits).

Some foods are typical for specific countries (depending on climatic conditions), others suit a religious purpose (taboos, fasting).

◆ **Ecologic value**

Production and transportation of food-items exert an influence on the environment, e.g.:

- ❍ the use of pesticides and synthetic fertilizers in conventional agriculture
- ❍ the pollution of ground water by the mass-raising of animals
- ❍ reduction of energy and raw materials during production and packaging
- ❍ energy used for transportation
- ❍ pollution by production and disposal of food-items and packaging

◆ **Economic value**

The economic value of food depends on how valuable it is for producers, processors, and dealers.

- ❍ *Producers* are interested in yield, attributes regarding harvesting, durability, shelf life, saleability, costs of production, and selling-price.
- ❍ *Processors* are interested in the qualities which permit processing, cost-price, and selling-price.
- ❍ *Dealers* are interested in durability, transportability, appearance, saleability, cost-price, and sales-price.

◆ **Political value**

Import and export (boycotts, fair trade)

e.g.: importation of feed from 3rd World countries for the production of meat in the industrialised countries

- ❍ *Fair trade:* initiatives which promote fair conditions of production and sale in 3rd World countries
- ❍ *Subventions:* e.g. subventions for biologic agriculture (protection of flora and fauna)
- ❍ *Price-stabilization:* e.g. by destroying excessive quantities
- ❍ *International help projects*: e.g. food for the 3rd World

1.1.2 Factors which influence the quality of food - from the field to the plate

The quality of food is determined right from the beginning of its production by the way it is cultivated, and by many more factors which exert an influence, up to the moment when it is served on a plate.

The most important role are the method of *cultivation* (use of fertilizers, pesticides, etc.), *storage* (prevention of infection by bacteria or pests), and *further processing* (technical procedures, use of additives).

Differences in quality also depend on whether pesticides or fertilizers were used for cultivation, or whether animals were raised with food which contains medicine.

Bio-products differ from conventional products by the way they were produced: in agriculture, no chemical synthetic fertilizers are used, and pesticides are banned. As a consequence the products are almost totally free of residues left by pesticides.

Animals must be held according to their needs, - they must spend a certain number of days in a year in open places (e.g. pastures), and each animal must be given a minimal, established amount of space in the stable. Feed proceeds of biologic cultivation.

Feed-additives, like antibiotics or growth-stimulating medicines, are banned.

The quality of cultivated food depends on the kind of pesticides and fertilizers which were used, and on the timing of respective measures (e.g. pesticides before harvesting).

Some food is genetically modified, some is not.

Correct storage is important because food can spoil or become harmful by fungi or bacteria and the toxins they produce.

When food is processed different additives are added. Some are technically necessary, others enhance taste, or just make the product look better (preservatives, flavor enhancers, coloring, etc.).

The final product contains new, sometimes undesired substances, which are added during processing.

Negative examples hereof are the fatty acids in margarine and snacks, which can increase the risk of a heart-attack, and the cancer-producing acryl amide which develops in food which is rich in carbohydrates which has been exposed to high temperatures, - e.g. crisp-bread and cookies.

The trend towards convenience-food creates a strong demand of processed food. Although the substances which are used are tested, side-effects and allergic reactions are quite common.

For this reason, exact labelling accords with consumer-interests.

1.2 Judging the quality of food - how to know whether food fulfils our expectations?

1.2.1 Ways of food-production (cultivation/raising of livestock)

- conventionally produced food
- genetically modified food
- biologically produced food
- fair-trade products

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1.2.2 Degrees and methods of processing

- unprocessed products
- processed products like pie-crusts, instant products, ultra-pasteurized milk

1.2.3 Labelling on the packing

Food which is packed must show certain information on the packing or on an attached label.

This information must be easy to find, easy to read, and in language which is easy to understand [45].

Goods which are not packaged (e.g. fresh bread in the supermarket) need not be labeled.

Important information regarding labelling:

www.umweltzeichen.at

www.bioclub.at

◆ **How fresh is a food-item?**

Minimal shelf-life or expiration date must be specified.

Sale after this date is permitted if the product can still be eaten without objections. But the end of expected shelf-life must be visibly shown.

After *expiration date* sale of the product is illegal.

Products which must show an expiration date instead of a date of maximal shelf-life:

fresh meat, packed in plastic-foil	sausage for frying
raw minced meat	packed fresh fish and pieces of fish
different kinds of raw sausage	raw milk
cut meat	raw cream
bones	butter made from sweet, raw cream
raw sausage for frying	buttermilk made from raw milk
raw chicken	cottage cheese made from raw milk
chicken-wings, young chick, offal	

Country of origin and the resulting distances of transportation are a cue for freshness!

◆ **How can we know whether an item of food is free of harmful ingredients?**

Laws establish limiting values for ingredients which can be harmful. Respective institutions of control protect consumer-interests by spot checks.

If the consumer cares for food which during its production is not exposed to pollutants and is free of possible harmful ingredients, he ought to choose products of biologic cultivation.

Products with the label "organic" must conform to EU-criteria. Independent institutions which are authorized by the government regularly check the way the product makes from the field to the supermarket-shelf. Enterprises which produce biologic food are usually inspected without previous notice, and at least once a year.

◆ **Labelling of organic-products** (see www.bioclub.at)

Biologic products can be recognized by the following markings:

of (controlled) biologic cultivation,

of (controlled) biologic farming,

of (controlled) biologic agriculture,

instead of biologic the terms ecologic, or organic-biologic, or biologic-dynamic can be used.

Each biologic product must show an "eco-control-number":

AT-N-01-BIO 1001 or DE-000-Öko-Kontrollstelle

AT: Austria, DE: Germany, CH: Switzerland

In addition, the eco-seal is awarded according to EU-standards defined by the EU - Eco-decree 2092/91. The seal confirms that at least 95% of the ingredients of a product are of biologic cultivation.

◆ How can we know where a product comes from?

In EU-countries mention of the country of origin is not mandatory. Nevertheless packing often gives references regarding the country of origin (which cannot necessarily be deduced from the producer, or the firm who packages, or the seller, whose mention is mandatory). Some supermarkets mention the country of origin on the sign which names the product.

◆ Which food is altered?

Processed food

Processed food (e.g. "mashed potatoes" = are generally altered for conservation, or enhancement of desired qualities - as compared to the original product - (e.g. potatoes), by mixing in additives.

Processing itself sometimes creates undesired substances (e.g. acryl amide when temperatures are very high), which were not contained in the original product.

Genetically modified food

Genetically modified food, flavors, and additives must only be unmistakably labeled as "genetically modified" if the finished product contains genetically altered idioplasmic substance or protein of the altered organism in traceable quantities.

Beginning with spring 2003 probably all products which either are genetically altered organisms, or which contain parts of such organisms, will have to be labelled (e.g. oil produced from genetically altered corn will have to be labelled, although the oil contains no traceable quantity of genetically altered protein or altered idioplasmic substance).

Food treated with radiation

Ray-treatment with ionizing rays destroys micro-organisms (bacteria and fungi), as well as insects, and prolongs shelf-life. Radiated food also ripens slower. As some aspects of radiation are objectionable (undesirable alterations of vitamins and amino-acids), irradiated food must be labelled with the term "irradiated" or "treated with ionizing radiation“.

◆ What does a processed product contain?

Packed products must specify all ingredients, even if they were not added, but created by processing.

List of ingredients

Ingredients are all substances which were used for production, and all substances which are contained in the final product.

The substances are ordered according to quantity, - beginning with the "main" ingredient, and finishing with the most negligible ingredient.

Additives are ingredients of which a minimal quantity is added, in order to fulfill a specific function, e.g. colorings, preservatives, emulsifiers, stabilizers, anti-oxidants, etc. Additives must be listed by their names or respective E-numbers, and their technologic function. They are only permitted if they are listed under the heading "positive" in the decree on food-additives.

A list of E-numbers can be found in:

Doris Fritzsche, Erich Muskat, Ibrahim Elmadfa, 8. Auflage 2002, E-Nummern, GU Kompass, Lebensmittel-Zusatzstoffe, ISBN 3-7742-2320-3,

C.Nohel, H.Rützler, H.Schöffl , 2000, Lebensmittelkennzeichnung in Österreich, AK Wien (on. y.) Was steht drauf? Wien

Flavors must be mentioned, but the chemical composition of artificial flavors need not be specified, - the expression "flavoring" is sufficient. "Natural flavoring" means that flavors are produced by physical, enzymatic, or microbial processes.

◆ **Which food is free of additives?**

As a general rule food which is less processed contains less additives (potatoes contain no additives, but packaged mashed potatoes may contain colorings, preservatives, etc.) [46].

For bio-products the list of permitted additives is much reduced. Of about 300 additives which in the EU are permitted for food, only 34 are permitted for bio-products [47].

Bio-products must be free of flavor-enhancers, colorings, nature-identical, and artificial flavorings.

According to Austrian food-laws the following food-products must be free of preservatives:	
fresh buttermilk	crème fraîche
kefir without fruit	natural yogurt
cottage	cheese
fresh potatoes	fresh vegetables
sprouts, wheat germ, etc.	seed
spure vegetable oil (refined oilmay be enriched with vitamin C)	
eggs	fresh mushrooms
fresh fruit (except waxed apples or surface-treated citrus-fruit and banana)	
legumes	cereals
dried noodlesrice (not pre-boiled)	nuts
coffee-powder	natural mineral water and spring water
honey	

◆ How sustainable can a food-product be?

Products of fair trade show the fair trade symbol (additional information: www.fairtrade.at)

Ecologic sustainability: it is given when food is prepared and processed according to the criteria of biologic/ecologic agriculture.

Ecologically sustainable products are

Products which are packaged minimally or not at all - they reduce energy and use of resources for packaging material, and for disposal.

Regional products and seasonal products: strawberries in summer, squash in fall) - seasonal cultivation reduces energy (no heating of greenhouses).Short distances of transportation reduce exhaust fumes. (Information on the harvest-time of vegetables and fruit can be found in the seasonal calendar, which can be ordered from "die umweltberatung", 1140 Wien, Linzerstraße 16/3).

Biologic agriculture produces in a way which preserves soil, groundwater, and fauna, and creates about 60% less CO_2 than conventional agriculture.

More information on bio-labelling: *www.bioclub.at, www.ama.at*

◆ **What does the bar-code on the packaging mean?**

The black bars in the white field and the numbers under the barcode are a code for:

- country of origin (first two numbers)
- producer (next five ciphers)
- number of article (next 5 ciphers)
- control-number (last number)

At the cash-register scanners read the code, look for the corresponding price, and print it [48].

Country - codes

90-91 Austria	84 Spain	80-83 Italy
76 Finland	383 Slovenia	385 Croatia
520 Greece	73 Sweden	57 Denmark
54 Belgium/Luxembourg	50 Great Britain	400-440 Germany, also 40
30-37 France	539 Ireland	599 Hungary
560 Portugal	590 Poland	

1.3 Legal regulations

International guidelines regarding food- standards (FAQU and WHO)

The Codex alimentarius specifies a list of food-standards.

www.codeexalimentarius.net

EU-regulations

- biologic agriculture and labelling: EU-reg. 2092/91
- novel food: EU Reg. 258/97
- genetically modified food: EU-reg. 49/2000 (establishing the limits of tolerance)
- EU-reg. 5072000 (regarding food, additives, labelling)

Additional national laws and systems of control further regulate consumer-information, labelling, information on the countries of origin of food-products, ingredients, additives, etc.

2. Didactic processing

	Introduction/ orientation	**Sure as eggs is eggs? – Food and nutrition** Drinking coffee together
1	Methods	**Establishing criteria for testing coffee** When drinking coffee together the members of the different groups discuss which criteria should be adopted for testing coffee; they talk about their everyday-habits regarding breakfast, and comment individual preferences and habits. The results of coffee-testing are written down in form of a table of evaluation, on a poster or on a OH-foil. It has proven helpful to use the categories "good", "rather good ", "rather bad", "bad". **Testing – collecting and evaluating taste-impressions** One by one different brands of coffee (e.g. fair-trade coffee, biologic coffee, instant coffee…) which were served in the same way (same quantity, same temperature) are tested, and evaluated by using the previously created tables of evaluation. The participants drink their coffee as they individually prefer – for most people black coffee without sugar does not taste good and would thus throw a negative light on the activity. **Final discussion** Final evaluation designates the winning product. In a list all tested coffee-brands are ranked according to the number of votes they got, and the taste of bio- and fair-trade coffee is compared to products from conventional cultivation. Prices and net-contents are compared.
2	Objectives	• concentration on taste • develop "awareness" of eating" • reflect own eating-habits • heighten awareness of the quality of a product

3	Contents	- making a point of own eating- and drinking-habits, and of fair trade; - collection and evaluation of taste-impressions
4	Duration	60 minutes
5	Material	✓ OH-transparencies, pens ✓ poster paper, pens, flipchart ✓ coffee-machine, filter-coffee, coffee-filters, sugar, cups, coffee-spoons ✓ dish-towels, dish-washing soap, sink or other possibility to wash dishes ✓ different brands of coffee (including fair-trade product) in a corresponding number of thermos flasks

	Planning	**Sure as eggs is eggs? – Food and nutrition** 1) reflection of breakfast-habits: 15 minutes 2) vitamin C test on 6 brands of orange-juice: 30 minutes 3) bitter chocolate: 60 minutes 4) information regarding food-labeling and evaluation of quality: 60 – 120 minutes
1	Methods	Reflection of own breakfast-habits **Individual work** Each participant notes down his/her own breakfast-habits: What's drunk or eaten? When? How much? Under which circumstances? What is not drunk or eaten, but would fulfill a wish? How many summed up km have the ingredients of breakfast travelled? Demonstration by a set breakfast-table in front of a map of the world. Each item of food shows a note with the distance (in km) which it has travelled. **Vitamin C test of orange-drinks** Small groups The content of Vitamin C of orange-drinks of different brands is measured by using vitamin C test-strips. A record is compiled and the results are compared with producer-information on the package.

		Role-playing: bitter-sweet chocolate[1] The participants form five groups. Each group represents people who play a specific role in the process of production of chocolate. Each group is given a card which informs the members of the role they are to play, as well as an empty plate, and a short text which explains the origin of chocolate (see annex). A discussion-group, which consists of a delegate from each group and thus brings together the representatives of the different steps of production of chocolate, is formed: cocoa-farmers, cocoa-traders, supplier of milk and paper, representative of chocolate-enterprise, merchant. On a plate 40 pieces of chocolate on tooth-picks are served. They represent the total value of chocolate which is produced. In a preparatory session each group has already decided how many pieces of chocolate of the total of 40 pieces they should get for their work. They also have chosen a speaker who represents the group in the final discussion-round. Each of the members of the discussion-round wears or carries a symbol of identification, something which is characteristic of his role, e.g. farmer: straw-hat, merchant: jute-bag; supplier of milk and packaging: paper-hat; representative of chocolate-enterprise: tie; merchant: apron. The game is ended either after a previously determined number of rounds, or when no new arguments come up.

[1] This game was originally created by "Südwind Wien" (an organization which informs on and works with countries of the 3rd world, - translator' note)

		Subsequently, the game-leader reads the "solution" which reflects the factual reality of the world-market: merchant: 12 pieces chocolate-enterprise: 16 pieces suppliers: 4 pieces cocoa-trader: 6 pieces cocoa-farmer: 2 pieces. **Food-information – what is available and what is personally interesting for me:** brochures and information-sheets on topics regarding food are handed out and studied, either in small groups or on an individual basis. The topics are: fair trade, effects on environment and health, bio-products, food-labeling, testing, and evaluation of products. Each groups writes on a poster which other topics are related to the central theme (mind-mapping). Some examples of related topics are: agricultural production, fair trade, effects on environment and health, labelling, quality of food, systems of evaluation… Next each participant marks with a point or a star the area which he/she is most interested in. The posters of the different groups are compared. Based on the information which was extracted from the offered reading-material criteria for possible ingredients of a sustainable breakfast are defined.
3	Objectives	• reflection of own eating-habits • demonstration of "food-testing procedures" • reflections on fair and unfair trade, and conditions and coercion of work and production • extraction and evaluation of information
4	Duration	At least 160 minutes

5	Material	**breakfast-table with signs which show the distance of transportation (in km) of each item of food** ✓ table-cloth, coffee-pot, tea-pot, milk-jug, cups ✓ cards with km-information ✓ sugar, cocoa ✓ orange juice, apple juice, water ✓ yogurt, butter, milk ✓ oat-cereal, cornflakes etc. ✓ fruit ✓ bread, pastry ✓ cheese, sausage, marmalade, fish **vitamin-c test** ✓ 4-5 sorts of fruit-juice drinks ✓ test-strips (from pharmacy, price: about 20 □ for 100 strips ✓ paper or OH-transparency, pens or markers for record- taking **bitter chocolate** ✓ 2-3 bars of "fair-trade" chocolate (40 pieces) ✓ 40 tooth-picks ✓ 6 plates ✓ cards with a description of the different roles ✓ straw-hat, jute-bag, paper-hat, tie, apron, so the adopted roles can be identified ✓ solution ✓ **information-material:** brochures, folders, books, consumer-magazines with information on the specific topics: food labelling, fair-trade, species-conform animal-raising, biologic agriculture, sources of supply, protection of climate, etc.

	Translation into action	Sure as eggs is eggs? – Food and nutrition 1) creation of a schema of evaluation for sustainable shopping (60-120 minutes) 2) personal shopping list
1	Methods	**Creation of a schema of evaluation for sustainable shopping – group-work** based on the extracted information on food the degree of sustainability of different food-products (components of a sustainable breakfast) shall be evaluated. Specific criteria which are components of a general, final evaluation are defined, e.g. distance of transportation, sustainable ways of production, fair trade, price… Examples of evaluation-systems from different consumer-magazines illustrate different possibilities of developing a system of evaluation. These examples can refer to other products - like washing machines or mixers - , what matters is that they list useable criteria and illustrate their evaluation. The objective is to develop a simple, logical system (e.g. with ciphered marks), which permits a quick comparison of biological butter from New Zealand with conventional butter from a neighbouring town, regarding general sustainability. 6 products were chosen beforehand, an additional one is chosen by the participants. **Personal shopping list for a sustainable breakfast – individual work** How would each participant need to change breakfast-habits in order to increase sustainability without a loss of life-quality? **A personal shopping list for a tasty, sustainable breakfast is composed**, - individual work
2	Objectives	• the participants learn to evaluate available information on food and translate it into reflected buying-decisions which correspond to their own needs; • the interrelation of eating-habits, buying-decisions, and health-, social- ,and ecologic consequences shall be demonstrated; • the awareness of possibilities of choice with regard to eating habits and products shall be strengthened.

3	Contents	- different qualitative demands (fresh, tasty, healthy, sustainable, socially acceptable…) are developed and applied to a specific product which is evaluated accordingly; - a list of criteria for sustainable products is developed; - a personal shopping list for a sustainable breakfast is written.
4	Duration	75 – 140 minutes
5	Material	✓ pens and posters, or OH-foils for criteria of evaluation; ✓ examples of evaluation-systems presented in consumer-magazines; ✓ overhead-projector or flipchart; ✓ pens and paper for personal shopping lists

	Testing/ evaluating	**Sure eggs is eggs? – Food and nutrition** Sustainable shopping: where are conflicting goals; what will be difficult to translate into practice; develop ideas for coping with arising conflicts.
1	Methods	**Reflection** why and in which situations can difficulties with regard to sustainable eating-habits arise? **Discussion** Propositions on how to cope with the encountered problems. References to local agencies which inform on the subject.
2	Objectives	• development of strategies to solve conceivable difficulties which hamper the translation into action of sustainable nutrition
3	Contents	- discussion of the difficulties of sustainable nutrition; development of solutions
4	Duration	✓ 30 minutes
5	Material	✓ pens and poster