



FOOD QUALITY RESEARCH

The Monastery Study

HOW DOES FOOD QUALITY AFFECT BODY, SOUL AND SPIRIT?



Abundant testimony shows that individuals feel more content when they switch from conventional to organic or biodynamic food. Such a change is often accompanied by lifestyle changes. For example, many individuals stop smoking or become more active, thus making it more difficult to link observed improvements exclusively to the changes in nutrition. This study was designed to document any quantifiable or observable changes in individuals whose way of life remained constant while conventional food is substituted with biodynamic food. We looked for changes in physical and spiritual well-being, in intellectual acuity, as well as in the immune and digestive systems.

About the design of the study

The following conditions had to be met:

- We needed to find a group of individuals who ate all their meals in a cafeteria. All the members of the group should have a similar way of life and be capable of self-reflection. These conditions were met by the nuns at a monastery in the Black Forest (Germany).
- We had to design a study which allowed us to observe and compare distinct periods in which a diet of conventionally produced food and one of biodynamic food was followed.

Why not a double blind study

A double blind study certainly would have given us the best results. In a double blind study group A would change its diet from conventional to biodynamic food, while group B would think they had changed to biodynamic food whereas in reality they were still eating conventional food. Participants should not be able to discern whether they are part of group A or B. However, this was not possible, because the different types of food are often visibly different as well as being different in flavour. And if the comparison group did not change their food preferences, the whole comparison would be useless. From an ethical standpoint we also wanted the participants to know exactly what they were eating. The participants were not equally motivated and had different expectations. In our statistical calculations we took these differences into account.

Participants

For our study we changed the nutrition in the monastery. 23 nuns participated in the study as well as eight non-members of the order, among them four men. The participants that were not members of the order collected their food on a daily basis in the monastery's kitchen. The following graphs are based on the results of 17 nuns, who were between 59 and 80 years old. These nuns were selected because they had a comparable immune status.

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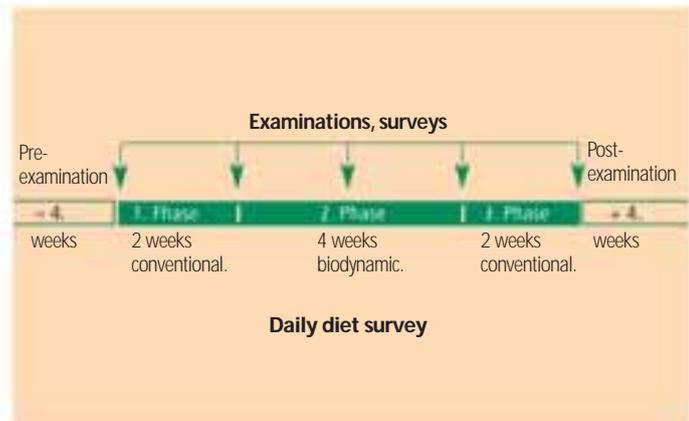
Participants in the study and researchers



Monastery of Heiligenbronn in the Black Forest

Design of the study

The study lasted eight weeks and consisted of three phases. In the first phase, which lasted two weeks, we replaced the frozen conventional meals that were usually served with freshly cooked conventional meals. In the second phase, which lasted four weeks, biodynamically produced food was served and in the third phase, which lasted two weeks, conventional fresh food was served again. We carried out a number of tests and surveys in these eight weeks as well as an examination four weeks before and four weeks after the study.



Design of study and times of examinations



A nun giving blood

Examinations

- Each participant documented in a diet diary their daily food intake: types of food and amounts
- Every two weeks they answered a survey about their physical and mental well-being. These surveys included questions to test their intelligence (mental acuity)
- Blood was drawn from each participant six times. On the same days they handed in stool samples.



Vegetables in the farm store that supplied food for the study

Biodynamically produced foods

During the second phase of the study 85 % of the biodynamically produced foods that were used were of Demeter quality. The rest of the food was organically produced. Vegetables, dairy, and meat came mostly from a nearby farm, the bread was bought at a Demeter bakery. The processed foods came from an organic food dealer or directly from the producers. A few products were purchased directly in a health food store.

Biodynamic food production follows the general principles of organic agriculture as well as the following principles:

- Diverse and balanced crop rotation
- Animal husbandry on every farm, cows with horns
- Ripe compost and manure is applied
- Use of specific biodynamic preparations
- Consideration of cosmic rhythms
- Gentle procedures in food processing



Food distribution

Procedures in the kitchen

It was quite a challenge for the chef to switch over to fresh vegetables for the study. He had to exactly follow the menu and adapt to new produce and food suppliers as well as a new delivery schedule. The kitchen crew had a lot of work with the preparation of the fresh vegetables and the extra preparation of food for the external participants. All ingredients were individually measured in order to make it possible to calculate the nutritional value of each menu item. The entries in the diet diaries allowed us to calculate the nutritional value for each participant.

**"I felt more alert,
much better than before."** (Sister A)

**"I realized that I had
hardly any headaches."** (Sister B)

"I felt great all around." (Sister C)

*Remarks by nuns during an interview for the regional TV-show
"Adventure Knowledge", transmitted on March 10, 2004.*

Physical and spiritual well-being, as well as intellectual acuity

The participants filled out surveys in which they rated the effects of their nutrition on different physical and spiritual characteristics on a scale from 1 (very bad) to 5 (very good). The best ratings were given for physical fitness and the ability to handle stress during the weeks the participants ate biodynamic food. The ratings for spiritual well-being were significantly different both during the 4 weeks when the participants consumed biodynamic foods as well as in the weeks after.

The drop in spiritual well-being after the change back to conventional food could result from the change in nutrition as well as from the lack of attention and the change in taste preferences.

During the study many of the nuns mentioned that they liked the biodynamic food a lot better. Some nuns also remarked that they did not like some of the conventional food anymore after the study was over.

Interviews conducted a year after the study was concluded (see above) show that the nuns had vivid memories of the experiences they made during the study.



Changes in spiritual well-being
Scale of 1 (very bad) to 5 (very good)



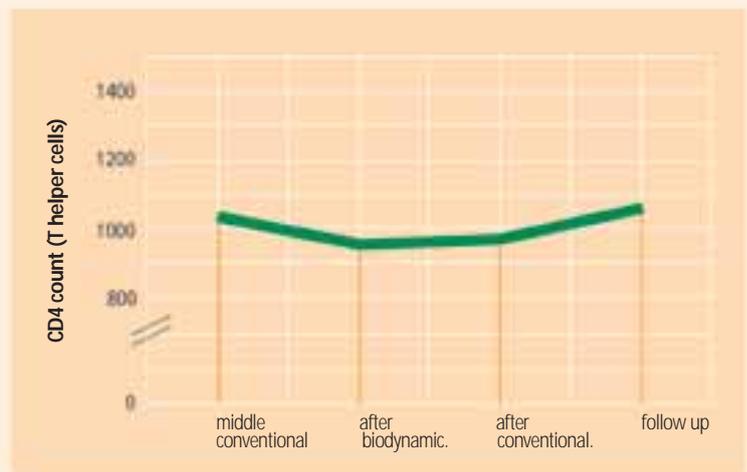
The surveys included exercises with mathematical problems, combination problems, and memory questions. A comparison of the surveys completed during the study shows that during the period when biodynamic food was served more of the participants were able to focus on these exercises and had better results than during the other periods. In the future, however, better standardized surveys should be used for assessing the intellectual acuity of participants in such a study.



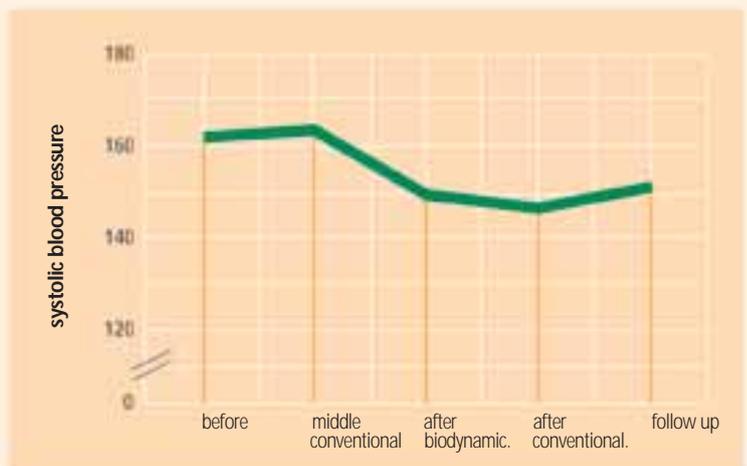
Blood parameters

Blood samples were checked for immunological parameters such as T helper cells. These cells influence the immune system. The amount of T helper cells in the blood can be influenced by mood.

During the biodynamic phase of the study we found a significant decline in the presence of these cells, independent of whether the participants in question had positive expectations towards the outcome of the study or not. The reduction could have been the result of reduced stress. The same could be true for the observed lower blood pressure.



Changes in T helper cells



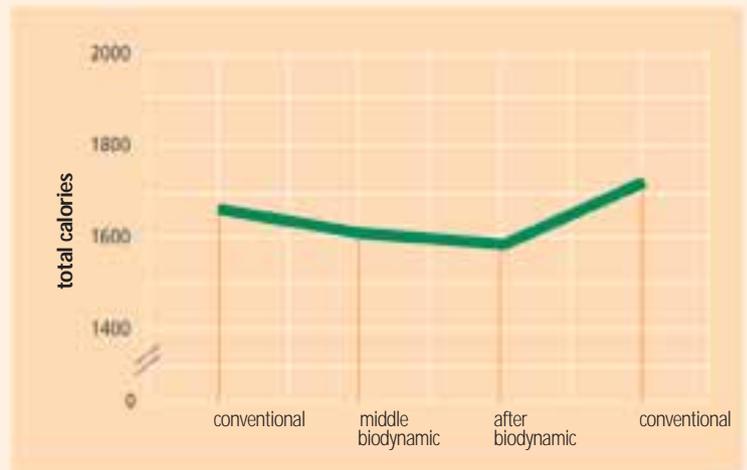
Changes in blood pressure

Eating habits

Although the menu did not change from phase to phase, the participants consumed fewer calories during the phase with the biodynamic foods than in the phases before and after. The weight of the participants did not change, whether they had positive expectations in this regard or not. They consumed less animal protein and fewer carbohydrates, but the same amount of fat and vegetable protein as well as more fiber.

This confirms earlier observations in households that switched to organic food. They tended to select different foods than conventional households, consuming less meat, sugar and alcohol.

The higher intake of fiber among the participants is a good development. Fiber has the potential to reduce digestive problems. Increased fiber intake in older people reduces the risk of cardio-vascular disease. A diet high in fiber strengthens the walls of the intestines as well as the immunological structures present there.



Caloric uptake of participants

Ph-value of the intestines

The ph-value of the intestines was one of the things determined from the collected stool samples. The value is typical for an environment in which certain intestinal bacteria can be active. These bacteria break up food components and suppress germs. A nearly neutral ph-value characterizes an environment with beneficial bacteria. A sour or too basic environment is characterized by the presence of bacteria that have a negative impact on health. Some of the participants already had an optimal ph-value at the start of the study, other participants had ph-values that were too sour and basic but during the study their ph-values became more neutral.



Weight of participants



Conclusions

No matter whether the results of this study resulted directly from the consumption of biodynamic food or from the new food preferences that resulted from their consumption, the following can be ascertained: The switch from conventional to biodynamic food can

- improve physical and spiritual well-being,
- lower blood pressure, and
- result in an immune status that seems to indicate less stress.

More studies will be necessary to consolidate these results.

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