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SENSITIVE CRYSTALLIZATION - A VALUABLE METHOD FOR ANALYZING INFORMATIONAL QUALITY OF FOOD SUPPLEMENTS

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Abstract: *It is well known that the growth of crystals results, when the growth is slow, in well-defined macro-crystalline forms (e.g. quartz). These forms can allow, in some cases, the identification of the message that is imprinted in the crystalline growth at the microscopic scale, because the microscopic information can be transmitted to the macroscopic scale. This phenomenon can be used as well as a morphogenetic qualitative method for analysing the biological informational quality of the added additive. Paper presents an application of sensitive crystallization method in the dietary supplement industry.*

Key words: *sensitive crystallization, qualitative morphogenetic analysis.*

1. Introduction

During the latest years, the necessity of using qualitative methods which should complete the conventional analytical methods is more and more clear. These qualitative methods should have an important contribution in the understanding of the concept of quality of medicinal plants and animal products by the human beings for a nutritional or a medical purpose [16].

Other examples of qualitative methods used right now are the pH determination, the determination of oxide-reduction potential, the determination of the resistivity, the determination of electro-chemical gradient, as well as different organoleptic methods. Out of the qualitative morphogenetic methods we should remind the capillary dinamolysis, the test of the sensitive drop, as well the analysis of the ice crystals realized by Masaru Emoto, method that have become famous during the latest years [12].

In agriculture, in the food industry and in the industry of food supplements the quality control of the products is mainly done with biochemical analytical methods which are often very much costly and difficult to realize, like physical, chemical and microbiological analyzes [8]. These methods are limited if we wish to appreciate the biological quality, if we have to determine from the beginning the evolution of a product, or if we have to compare qualitatively two products that chemically have the same composition but they are different by qualitative aspects, especially biological ones [1].

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This is why the producers are searching for different qualitative methods, out of which the sensitive crystallization is the best known and used morphogenetic method.

The sensitive crystallization is a qualitative method that was setup between 1930 and 1950 by many researchers, starting with the biochemist Ehrenfried Pfeiffer. It was used along the time and it is used in present with good results for evaluating the superior biological quality of the ecological nutritional products, and also for evaluating the biological modifications suffered by food, according to the method of processing. We used the term ”biological value” for defining global properties like freshness, purity level, “growing old”, “vitality” level (the “quantity” of energy of life which is present in a analyzed substrate). The sensitive crystallization makes a very clear difference between organic substances and inorganic substances, and regarding the organic substances can observe the gradual decrease of energy of life, as long as the biological death is growing , if the samples are, for example, leaves that where gathered and kept for several days, while they are gradually dying, getting dry [5].

2. Objectives

Herbs are used for therapeutic purposes in various forms of preparation: powder, water extract, infusion, decoction, tincture, glycero-hydro-alcoholic extract, syrup, tablet, etc. The criteria underlying the choice of the optimal form of preparation can be grouped into two categories: compliance or "taste" of the patient and the chemical composition of the finished product which is ideally standardized to a very small number of actives principles. Both can lead to wrong choices due to errors of judgment and subjectivity caused by harmful habits and due to limited and reductionist vision which overlook complexes with synergistic therapeutic activity from medicinal plants.

Our objective is to help through sensitive crystallization method to make the best choice between the various methods of herbs preparation.

3. Material and Methods

3.1. General Considerations on the Method of Sensitive Crystallization

The sensitive crystallization is the qualitative method used in the study of the morphogenetic forces (the forces that determine the appearance of the living and non-living physical forms and the living physiological phenomena) [15].

It is well known that the growth of crystals results, when the growth is slow, in well-defined macro-crystalline forms (e.g. quartz). These forms can allow, in some cases, the identification of the message that is imprinted in the crystalline growth at the microscopic scale, because the microscopic information can be transmitted to the macroscopic scale [2].

The method was setup by Ehrenfried Pfeiffer (1899-1961) who wished to find the way to present with a material method something immaterial and especially specific to life. For this reason he has been searching for a „reactive sensitive to the alteration of the shapes, like turnsole is sensitive to acids and bases”.

Pfeiffer had tested several salts for this purpose and in 1925 he setup the method of sensitive crystallization on basis of hydrated cupric chloride (CuCl2x2H20), which is the most sensitive salt to the alterations of the morphogenetic forces in report of the added substance. We should mention that both Pfeiffer and the others researchers like Selawry, Kolisko and Jung had tested other alkaline salts and earth-alkaline salts (with sodium, magnesium,

potassium) and also metallic salts (with iron, lead, gold, mercury, silver, zinc), before choosing the hydrated cupric chloride.

The first work about crystallization present by Pfeiffer appears in 1927: „Aus dem Naturwissenschaftlichen Forschungslabor in Dornach" („The Communication of the Laboratory for Research of Natural Sciences in Dornach") [13], [14]. In 1930 he published „Kristalle" („Crystals"), in 1931 „Studium von Formkraften an Kristallisationen" („Study on the Forces That Generate Shapes in Crystallization"), în 1935 „Empfindliche kristallisationen als Nachweis von Formkraften im Blut" („The Sensitive Crystallization, Indicator of the Forming Forces Generated by the Blood").

The pure hydrated cupric chloride crystallizes in 100 mm - Petri dishes as very small grains of fine needles, without any dendrite-like shape. The organic additive has an inhibiting effect on the nucleation generation, amplifying the crystal volume few thousand times, the crystals are growing in three concentric circles generated by the radial growth of the dendrites formed from the initial growth point. This phenomenon can be used as well as a morphogenetic qualitative method for analysing the biological quality of the added additive.

The test is based on the study of the shapes that appear after the evaporation of the watery solution of cupric chloride mix with an extremely small quantity of substance to analyse (biological or chemical additive), evaporation which is realized in an acclimatization box.

Hydrated cupric chloride has a very specific capacity: it is extremely hygroscopic, therefore being very much willing to absorb water; it is also very sensitive to the information that is kept in the water. In the natural state, cupric chloride ($CuCl_2$), is found only in hydrated state, in which every molecule of cupric chloride has two molecules of water attached ($CuCl_2x2H_2O$). Completely dehydrated cupric chloride has a brownish colour, but being very hygroscopic in about 7 days it is completely rehydrated, becoming blue-green after the addition of the two molecules of water.

In the hydrated state, cupric chloride forms an orthorhombic crystalline structure. In the anhydrous state it forms crystals like cadmium iodine, octahedral, partially distorted. The solution of cupric chloride which is slowly crystallizing, in 14-20 hours, on a Petri dish, in an acclimatization box, forms groups of fine needles and no dendritically growth. [9].

When the solution is prepared with water that have supplementary information (e.g. diamagnetic water) or when we add an organic additive, the crystalline volume is few thousand times larger, the groups of fine needles are inhibited and we obtain a structure with three concentric circles created by the radial growth of the dendrites formed from an initial point.

Many scientific researchers have shown, during the latest years that water has remarkable properties: it can copy the information of a substance that is in contact to it, even if this substance is in the very, very small quantity compared to water. On the other hand, the cupric chloride behaves like a revelator of the information of the water, the same way silver is the revelator for the light in photography [3].

We can say that the appearance of the image of sensitive crystallization is very much like the way how iron dust is placed in a magnetic field, along the lines of this magnetic field, offering us a sort of "picture" of the magnetic field that now becomes "visible" for our eyes.

From this point of view, the sensitive crystallization is a "photography" of the morphogenetic forces. When a solution of

cupper chloride is in contact with a very small quantity of substance of biological origin, the water of the solution is impregnated with the information of the substrate, actually with the morphogenetic forces that coordinate the growth, the development and the degeneration of the living matter. These forces form what we may call **the informational matrix** of the analyzed substrate [4].

All the observation on the crystallization of the cupric chloride when it is in contact with a substance have shown that it is never combined with the analyzed substrate, but it is just modifying its aspect, the morphology of the crystallization network.

The analysis of the network of cupric chloride from a solution with additives, by X-ray photoelectron spectroscopy (XPS), has shown that the atoms of additives (atoms of nitrogen, carbon, oxygen) are absorbed to Cu on the surface of hydrated cupric chloride crystals, and a chemical shift between straight crystals and specific form of vending crystals grown from solution containing an additive was observed. No nitrogen at all was detected on either the surface or inside of the pure cupric chloride crystals. These elements (nitrogen, carbon, oxygen) only influence the morphology of the cupric chloride (Takashi Shibata and al., 1998).

Another study realized in France has proven that biocrystallization or sensitive crystallization is not influence by electro-magnetic fields. (Charpentier D., Barth J-G., Cocude M., 1998).

As a conclusion we can say that the method of sensitive crystallization is not only a laboratory analysis. It is first of all a modality of showing the **morphogenetic** forces that coordinate the growing, the development and the degeneration of the living matter. „In its immobile shapes we can read life and death, the health and disease, purity and pollution, the energy and the entropy, the organization and the chaos.[…] it can teach us in a specific way about the existence of hidden things in time. Every day, there are more and more people that consider that they are in front of the most extraordinary discovery of the XX-th century" (Jean-Pierre Lentin) [7].

Surprisingly, the image of the inorganic substances is neither centred nor organized. This major difference between the crystallization images of the living and non-living show exactly the presence of the forming forces of live.

During the last century there was an important discussion between the old chemists who considered that every living creature has something, that cannot be shown and that was called *prana* or *chi*, while the new chemists did not admit this idea because the existence of this power of life could not be demonstrated by chemical analyses. The sensitive crystallization demonstrate exactly the existence and presence of this energy of life that organizes and coordinates the appearance of the shapes and the physical structures of the living beings, what Rupert Sheldrake call *morphogenetic force*.

3.2. Fields of Application

Agriculture:

The method is used for determining the specific signature of a plant or part of a plant, for evaluating the level of vitality, health or level of degrading for a plant, for appreciating the influence of the earth and climate conditions on a plant: Friedrich-Vincenz von Hahn (1962), B. Petterson (1969), Alla and Oleg Selawry (1957-1975), Hans Kruger (1950), Magda Engqvist (1964), Jean Leray (1973).

The sensitive crystallization permit to evaluate the biological value of the food and beverages and also the influence of the type of agriculture and the way of processing on the food: Alla and Oleg Selawry (1957-1975),

J. Bockenmuhl (1980), Marie-Therese Piva (1980).

Human and Veterinary Medicine:

It is a modality for orienting the diagnosis in any kind of diseases, both for humans and animals; a way to determine the general state, the vitality, the degree of degeneration, etc. and even for the early diagnosis of cancer. The precision of the method is minimum 80% [11].

In the medical field we mention the studies of Pfeiffer (1927-1961), Begouin (1938), Pfeiffer and Miley (1939), Trumpp and Rascher (1939), Seigle (1939), Isabel (1940), Selawry (1939, 1940, 1949, 1957, 1959, 1969, 1984), Rohlofs (1944), Krebs (1947), Kubina (1954), Bourgeois (1954), Beckmann (1959), Bessenich (1960), Spielberger (1983), Huguette and Guille (1983), Barth (1984), Hoffmann (1985), Knijipenga (1996).

3.3. The Interpretation of the Crystallization Image

As a difference from the crystallization image of pure cupric chloride which does not presents a centre, but an assembly of small groups of crystallization, independent of one another, the image of sensitive crystallization for a living is an organized assembly having a centre which reflects the unity of the living being [10].

The reducing of the coordination, reflected in the appearance of secondary crystallization centres which are individualized from the general radiant structure, appears in case of the diminishing of the formatting forces, which means the decreasing of vitality-disease, degeneration, getting old.

The structure are not as clear, are less or are not as strong when the vitality is very much diminished and in this case the crystallization image is more and more like de image specific to the pure cupric chloride. This phenomenon shows the decrease of the specific life forces [6].

The texture refers to the aspect of the crystalline radial lines: their arrangement, the report between them (across, intimate linked, separated by narrow or large spaces, etc.), their width and brightness. Normally the rays are disposed radially, well individualized but with fine connections between them. The appearance of spaces between rays and the thickening shows the decrease of vitality. Also, if the rays did not reach the edge of de crystallization dish, this indicates a decrease of the vital energy.

3.4. Material and Methods

We are analyzed by sensitive crystallization, in similar conditions: a cold water extract (4 hours), an infusion, a short (5 minutes) decoction, a decoction (20 minutes) and a tincture of black currant leaves, a glycerinate extract from black currant buds and tablets made from this extract.

4. Results and Discussions

4.1. The comparison between a cold water extract (4 hours), an infusion, a short decoction (5 minutes) and a decoction (20 minutes) from the leaves of black currant (Figure 1)

We found the best informational quality in the specific sensitive crystallization mark of the cold water extract.

The second from this point of view is the infusion, and the next is the short decoction. The specific mark of the decoction show an increased chemical concentration but a low quality in comparison with the others extracts.

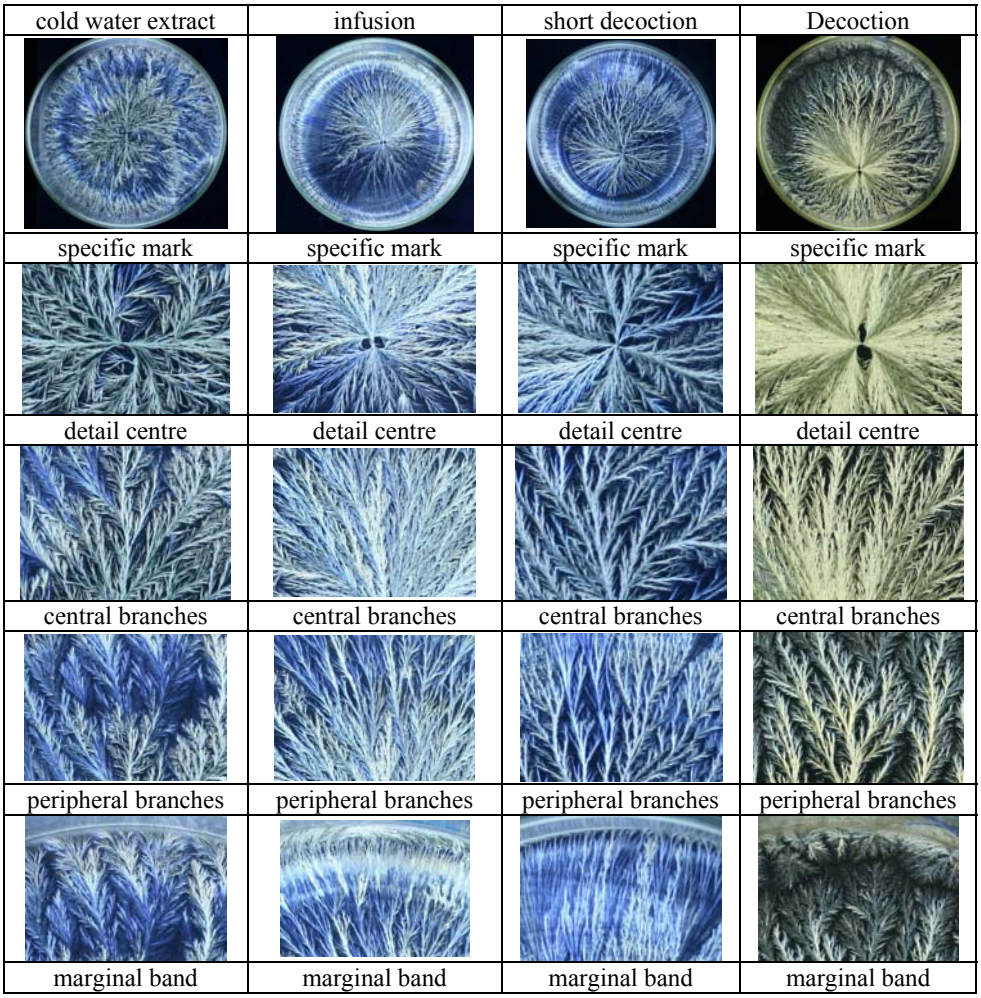

Fig.1. *Image of the comparison between a cold water extract, an infusion, a short decoction and a decoction*

4.2. The comparison between a cold water extract (4 hours), a tincture, a glycerinate extract and tablets made from glycerinate extract from black currant buds (Figure 2)

The informational quality of hydro-alcoholic extract is worse than the cold macerate, infusion and short decoction, but better than a decoction (20 minutes boiled).

The tablet has a low informational quality as the glycerinate extract.

The glycerinate extract is superior to the tincture.

The cold water extract is superior in terms of informational quality to all extracts analyzed.

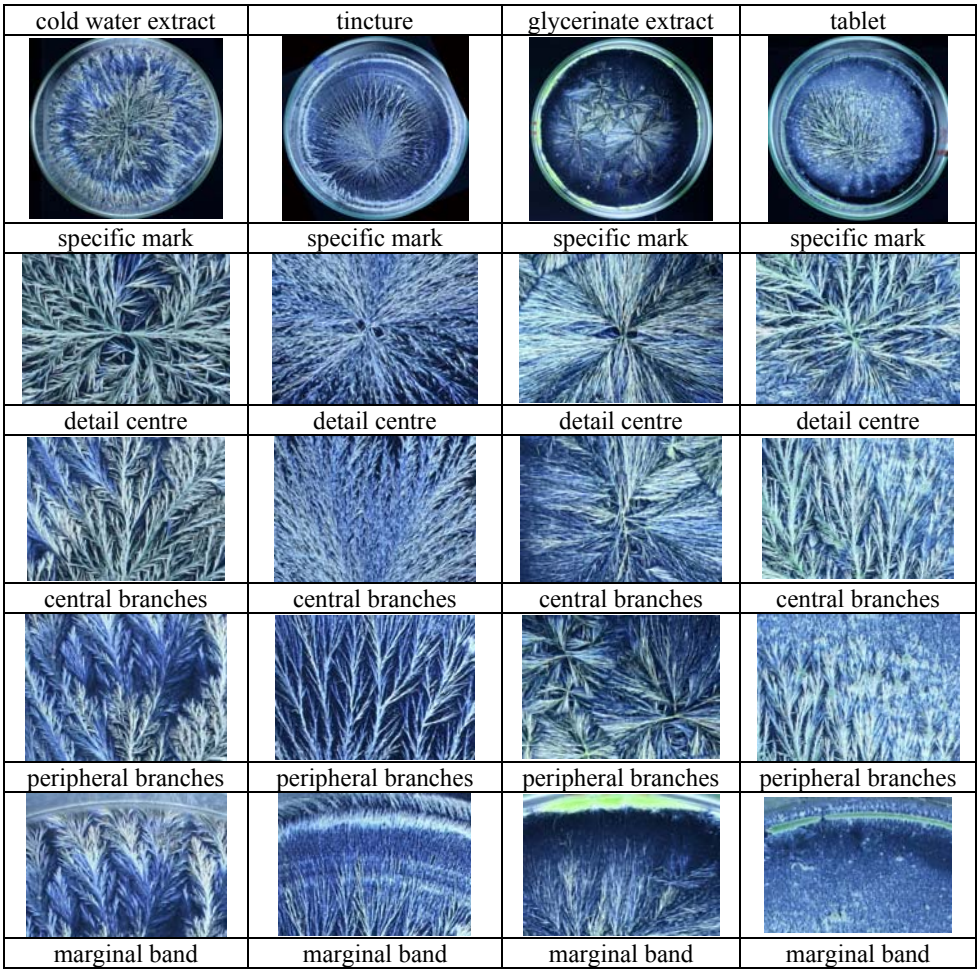

Fig.2. *Image of the comparison between a cold water extract, a tincture, a glycerinate extract and tablets made from glycerinate extract*

5. Conclusions

1. The plant is less processed (for example, cold water extract) as the informational quality is higher.

2. Processing the herbs by boiling, or hydro-alcoholic extraction or the obtaining of tablets alter the informational and energetic matrix of plants.

3. To get the maximum therapeutic and informational qualities of an herb, it helps the plant to be given in full form as little processed (powder, cold water extract).

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