Conference presentation

Review of crystallization processes applied for diagnosis and homeopathic research

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Background: The present study makes part of the project 'Systematic Review of Crystallization Processes Applied for Medical Purposes (SyRCrysMed)'. SyRCrysMed is planned to lead to a publication of three review articles: (i) on crystallization of blood and its derivatives (serum, plasma) for diagnostic purposes, (ii) on crystallization of other biological fluids for diagnostic purposes, and (iii) on crystallization applied to homeopathy (both, basic and clinical research).

Medical crystallization is a wide, however fragmented and little known field of science. It embraces different crystallization methodologies and applications. The commune scope of most of the crystallization-based methods is to access a more complex (or different) kind of information on the diagnosed/analyzed subject than it is possible by the use of conventional methods. The underlying thought to this analysis possibility provided by crystallization is that crystallization is an extremely sensitive process and is able to visualize not only the material dimension of the sample (e.g. composition), but also immaterial forces (e.g. force-like effects, sample's vitality). This sensitivity of crystallization encouraged some researchers (both in the past and nowadays) to apply this process also in homeopathic research. Here we present a first summary of the crystallization-based methodologies with focus on these applied in homeopathy.

Materials and methods: 177 articles, books, and book chapters on medical crystallization have been collected from scientific databases, university libraries, and the library at the Goetheanum in Dornach/Switzerland. The collected literature was divided into experimental studies and other literature. All methodologies described in the experimental studies were summarized in accordance to following criteria: type of the biological fluid, dilution degree of the fluid in the crystallizing solution, presence and type of reagent in the crystallizing solution, amount of the crystallizing solution per pattern, type of diagnosed disorder, and sensitivity and specificity of the method.

Results: The different diagnostic methodologies concerned mainly the crystallization of blood, plasma, serum and saliva, however also tears, urine, cerebrospinal fluid, vaginal mucosa, and sweat were used. The concentration of the sample in the crystallizing solution ranged from 100% to trace amounts. In case of diluted samples additions of salts, amino acids, neurotransmitters were used. The volume of the crystallization solution per pattern ranged from 3 µl to 6ml. The evaporation took place on a glass surface in forms of droplets, smears, or on round dishes (10cm diameter). The methodologies were applied for the diagnoses of cancer (different types and stages, including pre-symptomatic diagnosis), other diseases (e.g. diabetes, hepatitis B&C, multiple sclerosis, tuberculosis, cystic fibrosis, Sjogren's syndrome, gastro-

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intestinal disorders, colon polyps, senile dementia), and physiological stages (fertility days and pregnancy in women, differences before and after physical activity). Finally, the mean sensitivity of the methods amounted to 82.1% (from 40.6% to 100%) and the mean specificity to 84.9% (from 62.3% to 96.7%).

In overall the experimental methodologies can be divided into following groups:

- Evaporation of droplets of an undiluted biological fluid,
- Evaporation of droplets of a diluted biological fluid with addition of salts,
- Evaporation of droplets of a diluted biological fluid with addition of salts and amino acids,
- Evaporation of droplets containing salts, amino acids and neurotransmitters,
- Evaporation of droplets of a watery solution of ashes of a biological fluid (spagyric crystallization),
- Evaporation of films/smears of an undiluted biological fluid (ferning tests),
- Evaporation of larger amounts of crystallizing solution of a strongly diluted biological fluid with addition of copper chloride placed on dishes (Pfeiffer's crystallization),

Within the analyzed literature there were 10 works on crystallization applied for homeopathy. They concerned three different crystallization approaches, all characterized by a low concentration of the analyzed sample in the crystallization solution (from 1% to trace amounts), or even its absence. These methodologies, besides blood, concerned also plant models and crystallization of the homeopathic preparations by themselves (without a biological sample). In these approaches the crystallization took place with or without the addition of a reagent (salt).

Summary & Conclusions: Our preliminary results indicate that crystallization based methods might constitute in future valid, non-invasive, and cost-saving tools enabling, inter alia, pre-symptomatic cancer diagnosis. The studies on crystallization based methods applied to homeopathic research point at a great potential of these methodologies for both basic research and possibly also clinical applications and screening tests.

Disclosure Information: The Authors declare that there is no conflict of interest.

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