

APPLICATION OF RESONANCE EFFECTS IN FOOD INDUSTRY

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Abstract: There is a lot of time since the resonance effect is utilized in different domains of heavy and light industries. The utilization of this phenomenon showed its benefits, but not the whole potential of this method was discovered. The possibility of using the same effect in food industry is less studied. The most noticed advantage of using the resonance effect is the small amount of energy which is necessary to activate this process.

In this article is described the possibility of utilize the resonance effect for the realization of some technological processes in food industry.

Key words: resonance, food industry, energy quantity

Introduction

Humans long time ago learned to use **some phenomena that weren't yet understood** by them. Even unconscious they were applying these phenomena and often not in their favor. The story of **Jericho** walls destruction was the first registered case of resonance effect use [1].

The first scientist who discovered the resonance phenomenon was Galileo Galilei, who already in **1602** referred to this phenomenon in his paperwork dedicated to pendulums and music strings [5].

This principle is used for a long time in various fields of action: military, pharmaceuticals and medicinal, industrial, etc. [3].

According to The International Informative System – “**Resonance Technologies**” [4], there is mentioned that resonance phenomenon are truly founded at the base of events that have place in **Nature**, and which explains many “**anomalous phenomena**” and **evolutional processes of all that is alive** and not alive. The **resonance phenomena** are the **most stable** for diverse systems, beginning with **the microlevel** (molecules, atoms, electrons) and ending with **the macrolevels** that have place in **Nature** and **Techniques** [4].

Whenever the resonance phenomenon has place, the system irradiates a minimal quantity of energy and accumulates a maximal one, i.e. “loses” less than “gains”. In the same time, **a minimal action of the system leads to colossal macro and microscopic effects.** From this point of view the **role of the resonance technologies** is **very important** for our times, **proving to be the most economical, energetically** and as a result **ecologically pure**.

From the point of view of the theory, that appears from the papers of well-known savants **A. Puancare, P.N. Lebedev, M.V. Ovenden, N.G. Cetaev, I.I. Blehtan, V.G. Širocov**, et al, the **resonance is the most stable state of movement in Nature** [2].

The famous physicians **N. Remsi, V. Paul și H. Demelt**, were awarded in 1989 the **Nobel Prize**, for demonstrating experimentally the possibility of working with the **cell**, the **atom** and the **electron apart** and that resulted in the **creation of molecular electronics** and

a progress concerning the fundamental science and biophysics [6]. They succeeded to create the so called **electrodynamic traps**, which **allow retaining and selecting the atoms and molecules**. **In that way, the humanity gained access to the molecular level constructions** [6].

Speaking about the **importance of the effect of resonance in medicine we can refer to the methods of combating different illnesses, even the cancer**, by using **bioresonance therapy** [2]. Every living cell has an external membrane – cellular membrane. **There is a potential difference on the surface of any cell membrane** (Fig. 1).

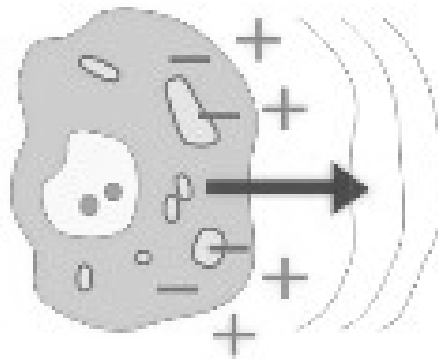


Fig. 1. Potential difference on the cell membrane [2]

Whenever the cell moves, the **membrane oscillates** and appears a **magnetic field which has a frequency of its own, that depends on the construction of cellular membrane**. For the same type cells, the frequency of their own oscillations will be the same. The scientists, by measuring the own oscillations frequency of the magnetic field of diverse pathogen microorganisms formed a database, basing on which a full human body diagnostic can be effectuated.

During the diagnostic the bioresonance principle is used: an electromagnetic field is headed to the human body, that has the frequency of a specified pathogen microorganism and if that one is present in the organism, there is a resonating response that appears, or signal amplification. In the same time there is a change of indices in the biologic active points, this fact is registered by the proper device. The signal amplitude increases several time (Fig. 2.)



Fig. 2. Overlapping of two waves of same frequency and amplitude [2]

The curing process has place in conformity with the same principle – the magnetic field with the frequency of the pathogen microorganism, detected by means of an inductor, is transferred to the patient organism, the effect of resonance has place, the cells membranes of the pathogen microorganism starts to vibrate violently, with such a strength, that they break and as a result – **the appropriate microorganism is destroyed** [2].

In the same way we can influence the **cells** of different vegetal raw materials, by achieving the resonance conditions, we can destroy the cellular membrane of vegetal molecule and as result – intensification of extraction process of nutritive substances (carbohydrates, fats)

For example, in the production of sugar beet, one of the basic processes is extraction, or so called – diffusion of saccharose molecules in water, which in this case represents the solvent. In this case the most important obstacle that slows down the elimination of nutritive substances from the vegetal cell of sugar beet – **is the cell membrane** surrounding the cytoplasm and the organs that founded in it [7]. So to destroy the membrane that wraps cellulose' vacuoles and to ease the extraction of the saccharose from the sugar beet chips, that ones are exposed to heating up to proteins' distortion temperature (above 60°C). The protein is distorting and all over the cell membrane appears opening pores and cracks, that assures saccharose extraction.

Conclusion

Our purpose is to **replace the heating process** of sugar beet chips by **electromagnetic field application** with such a **frequency**, which will **coincide with the oscillation frequency of the vegetal cell** that will **allow creating a resonance effect**, which will lead to the deterioration of cell membrane, **thus intensifying the saccharose diffusion process**.

In our opinion there is the **possibility to intensify the process of extraction** of others materials from any other raw material (for example vegetal oil extraction, from sunflower seeds, olives, maize germs, colza, etc.)

To realize the proposed hypotheses, we plan to utilize high frequency magnetic field, with alternative action, and at this stage of our researches, the main purpose is to determinate the **vegetal cell own oscillation frequency** for different vegetal raw materials.

We suppose that the implementation of that method will lead to the improvement of processing speed, and will increase **saccharose and oil obtaining productivity**, it will allow as well to **reduce the energetic costs**.

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