

## **New methods for preserving food**

A team at the Technical University of Berlin, Germany, is working on optimizing various so-called “non-thermal” processes to preserve food, including high-pressure treatment and the use of electromagnetic radiation and ultrasound. Among these, application of high hydrostatic pressure is the most promising. Pressures up to 10,000 bars are required for the treatment and are generated and exerted on the packaged food by means of force transfer through a liquid medium. In this way, the 7-day shelf-life of conventionally processed avocado puree stored at cool temperatures can be extended to 44 days. Preconditions for achieving an even pressure distribution are that the food has a liquid component and that it does not exhibit any internal gas-filled voids. Liquid foodstuffs like juices can serve as their own pressure transfer medium. Benefits of this process over conventional thermal processes include the retention of the product’s sensory properties such as colour, taste and appearance.

Another possibility is pressure freezing in which the product is cooled to temperatures between -12°C and -20°C at a pressure of 4,000 bars. Under high pressure, water in the food remains in its liquid phase but when the pressure is released, crystallization takes place instantaneously. In trials, tomato puree treated at a pressure of 6,000 bars retained approximately 15 per cent more glucose than an untreated control sample.

Application of magnetic pulses also enables pasteurization to take place at low temperatures. Electromagnetic radiation inactivates micro-organisms when light pulses are used for surface sterilization as well as when high electrical voltage is applied for sterilizing liquid foodstuffs that can be pumped. The high intensity of pulsed energy or light destroys the cell membrane, thus eliminating the micro-organisms. *Contact: Mr. Andreas Bertram, Germany. Tel: +49 (69) 2478 8267; E-mail: a.bertram@dlg-frankfurt.de.*