

1.3 GRAINS (G)

Food 3-8

CONTACT NON-EQUILIBRIUM PLASMA WATER TREATMENT IN SPROUTED BREAD TECHNOLOGY

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Introduction. Bread made without using flour and directly from specially prepared grain may enrich diet by biologically valued components, especially fiber. Sprouted bakery production allows decreasing food waste and losses along food chain. However shortcomings of the technology include a long duration of production cycle, low organoleptic properties and high microbiological risks. Water treatment with using contact non-equilibrium plasma leads to high penetrating ability of water and its antiseptic activity.

Aim. The work aimed studying possible ways to use plasma-chemically activated water in sprouted bread technology.

Material and Methods. Water treatment with nonequilibrium contact plasma was carried out in the discrete-type laboratory unit with the reactor volume of 0,5 dm³ to peroxide compounds concentration of 100–500 mg·L⁻¹. Bread composition excluded refined flour and contained biologically activated soft wheat grain. Determination of changing the technological processes and quality assessment was performed by physical, physicochemical and organoleptic methods.

Results. Activation of physiological and biochemical processes is achieved during grain soaking in plasma-chemically activated water in particular reducing falling number. Simultaneously duration of grain soaking decreases from 24 hours to 16 hours in case of the treatment water previously. Finished bakery products are characterized improved quality properties.

Conclusions. Sprouted bread technology can be developed by using additional water treatment by contact non-equilibrium plasma which allows obtaining functional bakery product having advanced organoleptic characteristics without artificial additives and sufficiently reducing the production cycle duration and prolonging mold-free shelf life.

Key words: sprouted wheat bread; plasma-chemically activated water; quality assessment; safety