The impact of atmospheric cold plasma treatment on inactivation of lipase and lipoxygenase of wheat germs

Wheat germ is a by-product of milling process which contains large amount of nutrients. The shelf life of wheat germ could improve by inactivation of destructive endogenous enzymes especially lipase and lipoxygenase. In this work, the impact of atmospheric cold plasma treatment on the inactivation of lipase and lipoxygenase enzymes of wheat germ was studied. Dielectric barrier discharge plasma was utilized to treat wheat germs. The impact of treatment time and voltage of plasma on the inactivation of lipase and lipoxygenase were investigated as well. The higher voltage and treatment time led to higher inactivation, however, the inactivation of lipase and lipoxygenase was not significant after 25 min treatment time. The DPPH radical scavenging activity and total phenolic of treated samples did not change significantly compared to controlled samples. However lipase and lipoxygenase recovered some of their loss activity during the storage. The recovery of activity was higher for lipase compared to lipoxygenase. According to the overall results, the cold plasma could be introduced as a new potential to stabilize the wheat germ and extending its shelf-life.

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