

**EFFECT OF OZONE APPLICATION ON POSTHARVEST
QUALITY OF BLACK PEPPER (*Piper nigrum* L.)**

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by

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ABSTRACT

Pepper (*Piper nigrum* L.) is the second most important perennial spice crop in Sri Lankan economy. A major problem faced by the pepper exporting industry in Sri Lanka is higher microbial contaminations. Ozone is a potent antimicrobial agent and considered as a GRAS (Generally Recognized as Safe) substance to be used in the food industry. This research study was conducted at Institute of Post-Harvest Technology, Sri Lanka to find out the effect of Ozone on the microbial quality of black pepper. Ozone concentrations and sample size to be treated were selected based on the preliminary trials. Pepper samples were collected from the local market. Black pepper samples were treated with Ozone (1.6 mg/h.g, 2 mg/h.g, 2.7 mg/h.g, 4 mg/h.g) for 15 minutes. Non-treated samples were served as the control. Total microbial count, yeast and mold count, coliform content, moisture and colour was determined prior to and after Ozone application. Treatments were arranged in a completely randomized design (CRD) and each treatment consisted with three replicates and the experiment was repeated three times. Turbidity of each sample was measured by UV spectrophotometer at 620 nm. Colour of each sample was measured by Chromameter. Moisture content was determined by distillation method. Data was analyzed using MINITAB 17. Microbial count, yeast and mold count and coliform content were reduced by Ozone compared to the control. The lowest microbial count (4.7×10^3 cfu/g) was obtained from 50 g of black pepper sample. Microbial count, yeast and mold count and coliform content of the treated samples were significantly different ($P < 0.05$) from the non-treated control treatment as these values were higher than that of non-treated control. Results revealed the potential of Ozone as a sterilizing agent for black pepper industry. Therefore, it could be concluded that the microbial count was reduced by ozone and it can be considered as a suitable method to maintain the quality of black pepper.

Key words: Black pepper, Chroma meter, Microbial count, Ozone, Turbidity