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ROSELLE / TEA / THIN LAYER CHROMATOGRAPHY

SASITIDA HUNGSAVANICH : DISINFECTION EFFECT OF OZONE
ON MICROBIAL CONTAMINATION IN BOTANICALS. THESIS ADVISORS:
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The density of microbial contaminants was evaluated on 4 botanicals: garlic bulbs, pomegranate fruit rind, roselle calyx and tea leaf. Results revealed that garlic was most contaminated, followed by tea, roselle and pomegranate. The disinfection efficiency of ozone on microbial contamination in these botanicals was compared to the traditional method (sun exposure). The number of contaminants was enumerated by standard plate-count method. The experimental results revealed that the number of microbial contaminants in ozone treated botanicals was less than in sun exposure treated botanicals and non-treated ones. The extended storage time of botanicals after treatment with ozone was longer than that after treatment with sun exposure when stored at room temperature. The ozone treated garlic could be stored as long as 6 months and the other botanicals for 1 year or more, while the botanicals exposed to the sun showed signs of spoilage after about 2 months storage for garlic and 6 months storage for the others. When the antimicrobial potency of ozone and sunlight treated botanicals were assayed by microbiological method, results revealed that such potency was shown to be higher in both high dose and long time ozone treated botanicals. The sunlight treated garlic and tea exhibited lower antimicrobial potency but the treated pomegranate and roselle tended to be higher. The preliminary chemical analysis to examine some major components in treated botanicals i.e., allicin in garlic; ellagic acid, gallic acid and tannic acid in pomegranate; hibiscin in roselle and epicatechin (EC), epicatechin gallate (ECG), epigallocatechin (EGC), epigallocatechin gallate (EGCG) and tannic acid in tea, by thin layer chromatography, the thin layer chromatograms revealed that the ozone and sunlight treated botanicals did not differ in their chromatographic patterns from the untreated ones. In comparison with the authentic compounds, garlic and roselle showed the presence of allicin and hibiscin, respectively. Pomegranate was found to have ellagic acid and tannic acid, while tea was found to have EC, ECG, EGC and tannic acid. *Bacillus cereus* ATCC 11778 spores were exposed to ozone, the number was determined by viable plate count. The sensitivity of spores to ozones were determined. The results revealed that the number of spores could be reduced if exposed to ozone at 200 mg/hr for 5 hr