

세정수로서의 전해산화수 적용 특성

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Applicable Properties of Electrolyzed Acid-Water as Cleaning Water

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Abstract

To enlarge application field of electrolyzed acid-water(EAW) on food industry, the changes of EAW properties by storage conditions and heating were investigated. It was showed that storing EAW in closed container is more effective to keep up the oxidation-reduction potentials(ORP), hyperchloride content and pH than stored in opened ones. ORP of EAW stored in closed container could be kept more than 1 month as 1,150 mV levels. During heating from 20°C to 95°C, ORP was increased to 1,150 mV levels at 95°C after gradual decrease to 50°C. Tyrosinase activity was decreased approximately to 26%~35% in EAW having a 950 mV~1,140 mV ORP. Also it was confirmed that EAW has anti-browning effect as sliced apple and potato, and their juices treated with EAW had conspicuous difference in their ΔE value. 12 kinds of pesticides such as aldrine, captan, diazinon, dieldrin, α -endosulfan, β -endosulfan, endosulfan sulfate, endrin, α -BHC, o,p'-DDT, procymidone, PCNB added in EAW were recovered from ND~73.6% comparing to ones added in distilled water. The recovered amounts of pesticides, procymidone and diazinon in lettuce after soaking in EAW were 1.12 ppm and ND, compared with those of amounts soaked in distilled water were 3.67 ppm and 3.05 ppm respectively. So, it seems that EAW has potentials to promote the degradation of pesticides.

Key words : electrolyzed acid-water, storage, heating, anti-browning effect, pesticide degradation

서론

경제성장과 더불어 과채류를 세정한 후 그대로 식용하는 기회가 잦아지고 착즙음료의 음용과 최소가공(minimal processing) 과채류의 일반화가 이루어지면서 세정 전처리의 필요성이 대두되고 있으나, 국내산 과채류의 주된 유통방법은 산지 수확후 별도의 전처리

없이 포장후 원형상태로 소비지로 운반됨으로서 유통과정 중 많은 폐기물과 환경오염 물질을 발생시킬 뿐만 아니라 적절한 유통조건의 부재로 선도하락 등 상품가치를 저하시킴으로서 농가소득 감소의 주원인이 되고 있다(1).

과채류의 세정은 통상적으로 부착된 이물질 즉, 흙, 먼지, 유충, 농약 등의 오염물질 제거를 목적으로 한다. 이중 흙, 먼지 등의 이물질은 일반적인 수처리에 의해서 가시적 효과를 기대할 수 있으나 오염 미생물 등은 1 log cycle 이상의 감소를 기대하기는 어렵다(2). 세정에 보편적으로 사용되고 있는 차아염소산은 과다 사용시 작업환경 악화, 잔류약취, 잔류염소 등과 채소조직의

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