

## PLASMA ACTIVATED WATER EFFECTS ON FOOD SURFACES

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In recent time Plasma Activated Water (PAW) has been explored for its suitability for fresh food disinfection. Plasma activated water is produced by exposing water to nonthermal plasma and the subsequent transfer of reactive species from the gas phase plasma to the water. Though PAW has been reported to be an effective disinfectant against various food pathogenic microorganisms, information on its stability, process optimization and reactivity with food components is still largely unexplored. We have designed and tested a continuous flow dielectric barrier discharge PAW generation system and the produced PAW was evaluated for its reactive species on food proteins (whey protein isolate in particular). Mild oxidation of the whey protein isolate and an increase in its solubility was observed upon PAW treatment.

The effectiveness of PAW as a disinfectant was also evaluated for fresh-cut produce washing which was tested on kale and spinach samples as well and fresh cut apple samples. Disinfection of up to 6 log cfu/g of *E. coli* cells on leafy vegetables was observed. Changes in product colour (from the degradation of chlorophyll) were also observed. In the case of cut apples, PAW treatment led to a reduction in the enzymatic activity while it slowed the onset on colour changes (typical browning of apple slices).