Title Steam, dielectric heating and copper sulfate treatment of inshell pecans

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Abstract

Water and a copper sulfate (CSL) solution at 27, 57 and 88°C; steam pasteurization and dielectric heating were analyzed on their effect in reducing microbial load (APC) and *Salmonella* Typhimurium on inshell pecans (*Carya illinoinensis*). The CSL solution (more effective than water alone) reduced APC by 1.5 (300 s), 2 (60 s) and 4.0 (60 s) log CFU/g at 27, 57 and 88°C, respectively; and *Salmonella* by 3.0 log at 27°C in 60 s. Steam reduced APC by 3.7 log in 180 s and *Salmonella* by 4.0 log CFU/g in 30 s. Dielectric treatment reduced APC by 3.0 log and *Salmonella* by 4.5 log CFU/g in 60 s. Most treatments had no effect on the pecan shell or the nut quality, except for dielectric heating, which gave a slight "roasted" or "burnt" flavor to the nuts. This study showed that a proper antimicrobial-hot water treatment, steam or dielectric heating will be effective in "pasteurizing" pecans, resulting in a safe and wholesome product.