

Application of N₂ gas to pig stunning

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As consumer's interests in animal welfare were increasing, the carbon dioxide (CO₂) gas stunning method has got a positive evaluation for the application to slaughterhouses due to the thought that cause less pain and stress to animals compared to the electrical stunning (Gerritzen *et al.*, 2013; Salwani *et al.*, 2016). However, there was a previous report that CO₂ gas stunning causes discoloration and change in texture of meat (Xu *et al.*, 2018). Therefore, this study was performed to examine the possibility of stunning pig using N₂ gas, and its effect on meat and small intestine quality in comparison with CO₂ gas and electric stunning. Seven pigs were randomly selected for each of 03 groups. Individual pig was separately kept on gas chamber and then started to gas running for fill up. Around 80 minutes and 35 minutes were required for 98% N₂ and 80% CO₂ gas filled up respectively. After reaching 98% N₂ and 80% CO₂, pigs were stunned within very short time (around 75 to 90 seconds). For electric stunning, electric devices were used. After slaughtering, meat & small intestine of each animal was collected separately. After 24 hours of slaughter, Light-ness (L*) and yellowness (b*) of meat and small intestine were higher in electric and N₂ stunning than CO₂ stunning, but redness (a*) and myoglobin content was vice versa. AOAC moisture, WHC, shear force, TBA (7D) and VBN (2D) of N₂ stunning meat were non-significant (p<0.05) with CO₂ stunning but significant with electric stunning. Cooking loss and proximate component were non-significant with each other group. Color parameters and thickness (both fresh and cooked) of small intestine were significant from each other's group, but shear force was non-significant with N₂ and CO₂ stunning. It is concluded that higher concentration of N₂ gas (98%) can be used for pig stunning and may replace of corrosive CO₂ gas.

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