Sulphur fumigation for cinnamon quills (*Cinnamomum zeylanicum* Blume): present status and future improvements

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Abstract

Sulphur Dioxide (SO_2) is a well, accepted and widely used food additive, being one of the most important and versatile additives in the food industry. Traditionally traders and exporters of cinnamon (*Cinnamomum zeylanicum* Blume.) in Sri Lanka treated quills and cut pieces with SO_2 fumes to avoid fungal and insect attacks and to increase the appearance of the product to golden yellow colour. The method used, amount needed and exposing time for fumes depend on people who are practicing it and no safety standards have been laid for them to follow on regulating the sulphur content in the product. Objective of this study is to identify the different fumigation methods, chamber types, amount of sulphur used and exposing time for fumes in Galle and Matara districts.

Four different sulphur amounts (5kg, 3kg, 2kg and 1.7kg per 1 t of quills) and 2 different exposing times to sulphur fumes (12 and 15 hours) were used in Galle district. Fumigation chambers are permanently built with cement and structure of chamber and method of arrangement of quills during fumigation differed from place to place. Hygiene of chambers is not well thought-out. In Matara district fumigation was done on temporary wooden racks made in open space covered with polythene. Amount of sulphur used and fumigation time varied in a similar range to Galle district. Fumigation is done more than once to improve the colour.

Immediately after fumigation samples were collected from chambers in Galle district and packed in sealed transparent polythene bags. One set of samples were analyzed on the same day of collection and the second set 4 weeks after packing. Highest amount of total sulphur (92 ppm) resulted in samples fumigated with 5kg S/t for 12 h and the lowest level of total S (31 ppm) was recorded in the sample treated with 1.7kg S /t of quills for 15 hrs. Any traces of total Sulphur were not found in control samples. Samples stored for a period of 4 weeks were resulted the highest amount of total S (31 ppm) in sample treated with 5kg S/t of quills and lowest amount of total S (5 ppm) in samples treated with 1.7 kg/ t of quills.

The study suggested the importance of standardization of sulphur fumigation process with appropriate technology and recommended hygienically improved chamber structure.

Keywords: Cinnamon, Fumigation, Sulphur Dioxide