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# PREDICTING THE LOSS OF VITAMINS B3 (NIACIN) AND B6 (PYRIDOXAMINE) IN BEEF DURING COOKING

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**Abstract**

This study models the losses of water-soluble vitamins B3 and B6 from beef meat during cooking by convection, radiation and/or contact with a hot surface. The model takes into account both expulsion of vitamins in the juice, and their possible thermal denaturation. Heat and mass transfers are predicted based on a previous study, and thermal denaturation is calculated by a first order equation. Unknown model parameters values were determined using a first set of experiments in which meat cubes were heated in water-bath. Model predictions were then compared with vitamin losses measured on different meat cuts steam-cooked in an oven. The model predictions agree with the measured losses in the oven. The model can be extended to meat of farming animals other than beef, other muscles than those used in this study, and other water-soluble vitamins than B3 and B6, if the rate constants used to predict juice expulsion and vitamins denaturation are changed.

**Highlights**

Predicting the cooking loss of water-soluble vitamins from meat; Model combines calculated heat-mass transfer and thermal denaturation of vitamins; Model is used to determine the impact of vitamin B losses on human nutrition

**Keywords:** meat, cooking, loss, model, water-soluble, vitamins.