# Nitrate and Nitrite Contents of Vegetables Marketed in Chiang Mai Province

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## ABSTRACT

***Determination of nitrate and nitrite contents of 33 kinds of vegetables marketed in Chiang Mai province and 4 kinds of self-planted vegetables without using chemical fertilizer was carried out. It was found that in marketed vegetables, 18 kinds had high nitrate contents, 15 kinds had low nitrate contents and 3 out of 4 kinds of self-planted vegetables had high nitrate contents comparable to marketed vegetables. The reason that nitrate contents were not different might be due to potassium nitrate fertilizer that was used for nourishing leafy vegetables and the fertilizers that persist in soil. The low nitrate contents in marketed vegetables might result from the fact that vegetables had changed them into protein and uric acid. Eating the vegetables for the adults is safe because some vegetables contain vitamin C and they also take 5 types of principle foods. Vitamin C inhibits the chemical reactions between nitrite and amino compound that otherwise becomes N-nitroso compound which is carcinogenic.***

***The results from this investigation suggest that we must be careful in using boiled vegetable soup as supplemental food for babies under 3 months old. These babies do not have NADH-methemoglobin reductase which is used for changing methemoglobin-$Fe^{+3}$ to hemoglobin-$Fe^{+2}$, and the new-born babies have hemoglobin-F 60-80% which is oxidized by nitrite into methemoglobin more easily than hemoglobin A. These reactions may cause the babies' death.***

**Key words:** Nitrate, Nitrite, Vegetables

## INTRODUCTION

Nitrate and nitrite are always found as intended or nonintended presevatives in food. Nitrate salt is a component of inorganic fertilizer potassium nitrate. In agricultural areas which this fertilizer is used, we will find nitrate in soil, water, plants and meat. Nitrate is the ferltilizer that nourishes leaves so we will find nitrate in vegetables. We may also receive nitrate indirectly from drinking water, tap-water, milk, fruits and meat. Food producers use nitrate and nitrite in preserved meat such as sausage, ham and canned meat and also in pickled vegetables. Sodium or potassium nitrate and nitrite can prevent the growth of *Clostridium botulinum*. Nitrate