

CHAPTER VI

CONCLUSION

The addition of button, shiitake, oyster and abalone mushrooms to the beef before boiling did not reduce the formation of mutagen precursor that could interact with nitrite. The mutagenicity activities of beef concentrate and mushroom extracts were elucidated with Ames *Salmonella* mutagenicity assay using strain TA98 and TA100 in the absence of activating system. None of the samples exerted mutagenicity towards *Salmonella typhimurium* on both tester strains. However, after being treated with nitrite, they expressed their direct mutagenicity that caused frameshift mutation and base pair substitution. It might be due to some nitrosatable precursors contained in these samples. When beef concentrate and mushroom extracts were mixed together before treated with nitrite. These mushroom extracts could not reduce the mutagenicity of beef concentrate. However, the actual mutagenicity indices from the experiments of the mixtures of beef concentrate and mushroom extracts were lower than the expected ones (summation of the mutagenicity index of nitrite treated mushroom extracts and nitrite treated beef concentrate). This may be due to the reaction between direct mutagen precursor contained in beef concentrate and some compounds contained in mushroom extracts that cause reduction of the mutagenicity of these mixtures. Exceptions were found on high dose of the button and oyster mushrooms that the actual mutagenicity indexes were higher than expected ones on frame shift mutation bacterial strain. The finding from this experiment suggests that consumption nitrite-containing food with boiled beef juices or beef boiled with mushrooms such as button, shiitake, oyster and abalone mushrooms should be avoid in order to prevent the formation of direct mutagen in gastric like condition.