

**THE EFFECT OF SULPHUR DIOXIDE TREATMENT BEFORE AND
AFTER BLANCHING ON BROWNING OF DRIED POTATO CRISPS
DURING STORAGE**



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ABSTRACT

THE EFFECT OF SULPHUR DIOXIDE TREATMENT BEFORE AND AFTER BLANCHING ON BROWNING OF DRIED POTATO CRISPS DURING STORAGE

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The extent of enzymatic browning reaction of dried potato crisps during storage was investigated. Factors such as browning inhibitors were evaluated in potato crisps processing, using qualitative and quantitative measurements of colour and texture changes. The potato slices were treated with sodium chloride and was blanched before and after dipped in sodium metabisulphite solution separately. The concentration of sodium metabisulphite used was 1000 ppm and 2000 ppm. Alcohol Soluble Colour (ASC) Index was used to measure the increment of brown pigmentation in potato crisps during storage. The decrease in lightness of potato crisps during storage was measured with Hunter Lab values of L^* , a^* , b^* . The application of 2000 ppm sodium metabisulphite to sample after blanching was better in term of colour of both ASC Index and Hunter Lab in the production of potato crisps, which effectively delay the onset browning after storage for a period of above 4 weeks. The texture of potato crisps became softer with an increase in sodium metabisulphite solution used for both treatments.

CHAPTER 1

INTRODUCTION

Potato is commonly known as Irish or white potato. The tuber of various domesticated species belongs to the *Solanum* genus (Talbert et al., 1987).

Enzymatic browning in potatoes is caused by polyphenol compounds, which is found in the skin and in the periderm layer next to it. Polyphenol compounds are substrates for the polyphenol oxidase enzymes (Talbert et al., 1987). Potato tubers that are rich in phenolic compounds are usually more susceptible to enzymatic and chemical browning. Treatments to prevent browning carried out like heat treatments to destroy enzymes, lowering the pH with various acids and also by using certain additives such as ascorbic acid, citric acid, sodium chloride or sulphur dioxide (Talbert et al., 1987).

In this case, sulphur dioxide (SO₂) is added as chemical inhibitors of browning reaction. SO₂ can be used in the form of gas or in aqueous solution as sodium metabisulphite. Moreover, it even acts at very low concentration and is inexpensive. Some treatments will be applied to inhibit browning by the use of sodium metabisulphite in different concentrations (Macrae et al., 1993).