

# Wastes to worth

## “Preservation of banana browning by using waste onion peel extract.”

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### Introduction:

Onion peels are used as dietary fibre supplements (gelling and thickening agents) in refined foods. These compounds increase the bulk of the food and help prevent constipation by reducing gastrointestinal transit time. It also binds to toxins in the food which helps to protect the gut mucus membrane and thus reduces colon cancer risk. Furthermore, dietary fibres bind to bile salts and decrease their re-absorption, thus helping to lower serum low-density cholesterol levels. Dietary fibres and phytochemicals are gaining increased attention because of their antioxidant, anti-carcinogenic, and other health-benefiting properties. The onion industry produces waste that amounts to approximately 15% of the total production. Since onion (*Allium cepa* L.) wastes (residues, surplus, and cull onion) are not suitable for fodder or landfill disposal due to the rapid growth of phytopathogens, e.g. *Sclerotium cepivorum* (white rot). Processing and stabilizing onion wastes could solve the problem of its disposal and getting stabilized onion by-products as natural anti-oxidant food ingredients. Studies showed that brown skin and top-bottom could be potentially used as a functional ingredient rich in dietary fibre, mainly in the insoluble fraction, and in total phenolics and flavonoids, with high antioxidant activity. Moreover, brown skin contained a high concentration of quercetin aglycone and calcium, and the top-bottom had a high concentration of minerals. Outer scales could be used as a source of flavonols, with good antioxidant activity and content of dietary fibre. Onion wastes adequately processed and stabilized could be useful in the food industry as functional ingredients to be added to processed foods. Onion extracts could be used as natural food ingredients for the prevention of browning caused by the enzyme polyphenol oxidase.

While a banana at the beginning of the ripening process might become sweeter and turn yellow, it will eventually over-ripen by producing too much of its own ethylene. High amounts of ethylene cause the yellow pigments in bananas to decay into those characteristic brown spots in a process called enzymatic browning.

We tried waste onion peel extract at home for the prevention of the browning of bananas. This project is undertaken to prevent the spoilage of bananas by natural and home waste onion extract.

### Objectives:

- Collection of waste onion peels and extraction of onion extract.
- Collection of fresh bananas from the market.
- Applying fresh waste onion peel extract on bananas

- Applying processed waste onion peel extract on bananas.

## **Materials and Methods:**

### **Collection and preparation of onion peel extract:**

100 gm of waste onion peels were taken in a 250 ml capacity beaker and a 10 ml amount of water was added to these onion peels. The content of the beaker was crushed into juice. This mixture was kept in a fine cloth to squeeze onion extract. 50 ml of this extract was collected in a clean glass beaker.

### **Application of extract:**

Three fresh and yellow ripen bananas were taken in two separate containers. One banana was kept in the container as a control while another banana was applied with a small amount of extract and kept in another container. Both bananas were examined for color change 24 hrs time intervals.

### **Application of processed onion peel extract:**

The extracted onion peel extract was heated at 100<sup>0</sup>C for 10 minutes. The processed extract was applied to the banana that was kept in a third container.



**Brown Banana [Spoiled Banana]**



## Onion Peel Extract

### Results and discussions:

The banana kept in the first container started to brown after 3 days. The container second containing the banana started to brown after 5 days. The processed extract applied banana remained as it is after 7 days. The processed extract was most effective for inhibiting the browning of the banana.

### Conclusions:

All three experimental bananas started browning. The fresh extract delayed the banana browning effect. The most effective anti-browning effect was achieved by processed onion peel extract. We conclude that processed onion extract was showing a markedly anti-browning effect on a banana.

### References

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