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Analysis of phosphorus as an impurity from the use of calcium carbide as an artificial ripening agent

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Statement of the problem: In order to achieve early ripening of fruits, chemicals, and ripening agents are used by retailers and farmers. Artificial fruit ripening is illegal but also practiced regularly and most of them are banned. These agents or chemicals create health problems. These chemicals exhibit several adverse effects on human health hence precaution or control should be put in place. The aim of this research was to identify the trace elements of calcium carbide present in the banana samples and determine the level of these trace elements present in the banana samples on both Ghanaian and Chinese market as well as ascertain its severity and toxicity content.

Methodology & Theoretical Orientation: Using vanado-molybdate method, the ash banana samples were boiled with 10mL of 5g/mL HCl and the solution was then washed into a 100mL volumetric flask using water and then filtered. The solution was then neutralized by dropwise addition of 0.88g/mL ammonia (the volume at this stage was 55mL) and then a standard solution was prepared. This was done by just adding the HCl to the dilute nitric acid, then 25ml of the Vanado-molybdate reagent was added and diluted to the mark.

Findings: The optical density was then measured. Phosphorus was present in all the six samples. There was a significant difference in the amount of phosphorus present in the banana samples from both the Ghanaian market and Chinese Market.

Conclusion and Significance: From the experiment conducted, if a person is to consume 100g of banana (powdered) from Ghana, he/she will be taking in as much as 2020.66mg of phosphorus, a figure almost three times the highest tolerable amount in humans per day. If this same person is to consume 100g of banana (powdered) from China, he/she will be taking in as much as 2001.66mg of phosphorus, another figure almost three times the highest tolerable amount in humans per day.

Biography

Samuel Kesse, a registered pharmacist in Ghana and currently pursuing his masters' degree in Pharmaceutics at China Pharmaceutical University has an expertise in chemistry and drug designing. As a young researcher, his focus is contributing his quota to the science world. This research focused on artificial ripening processes and its effects on human populace. The Vanado analysis coupled with other analytical processes were successfully employed in this research.

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