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## **DEVELOPMENT OF A SIMPLE, INEXPENSIVE AND ENVIRONMENTAL-FRIENDLY ARSENIC (III) DETECTION KIT**

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### **Abstract**

Drinking of arsenic contaminated waters has been reported adversely affect our health even at a concentration level as low as 10 µg/L, therefore the availability of a reliable and cheap, and an environmentally arsenic detection kit is really indispensable. Although simple field test kits have been developed, most of them use toxic mercuric salt as a color-generating reagent for arsenic detection. Hence this study was conducted to develop a simple, cost effective, and environmental friendly arsenic (III) detection method based on a colorimetric determination of arsine gas produced by arsenic-zinc powder- sulfamic acid reaction. To optimise the reaction conditions, effects of the reaction period and amount of reagents on the color formation were investigated. The best conditions to detect arsenic (III) in a 50 mL sample were found to be using 1.0 g sulfamic acid and 0.5 g of zinc powder at 10 minutes of the reaction period. The method was then used to determine concentrations of arsenic (III) in tap water samples and compared with liquid chromatography-inductively coupled plasma-mass spectrometry (LC-ICP-MS) to validate its accuracy. This study revealed that they were in good agreement for the arsenic (III) concentrations of 0 to 300 µg/L.

*Key words:* Arsenic (III), colorimetric, detection kit

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