Abstract

Recent clinical analysis and medical examinations have reported a numerous adverse effects induced due to improper administration of sodium phosphate colonic preparations given to the patients. Sodium phosphate enema preparation is the treatment for bowel cleansing purposes prior to colonoscopy. It induces serious electrolytic abnormalities in the elderly of which intestinal potassium loss is more prevalent [1]. Inadequate elimination of potassium eventually results in multi-organ failure. This paper encompasses implementation of potassium based biosensors, microcontroller unit for processing and WBAN (Wireless Body Area Network) for precise dosage of sodium phosphate enema preparations. Crown ether layer deposited Ion selective Field Effect Transistor (ISFET) serves the purpose of determining potassium ion concentration in the human blood serum. The results of experimental characterization of the
ISFET with ion selective coating as a function of K+ ion concentration have been demonstrated. This information gathered from MEMFET (Membrane Field effect transistor) is further carried to microcontroller unit for safe level detection of serum potassium level. Each individual sensor nodes will directly transmit the sensed physiological data to a control unit (CCU) and then to remote stations for diagnostic and therapeutic purposes using UWB and WMTS bands.

References

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A Cognitive Approach for Safe Sodium Phosphate Enema Administration by Implementing Wireless Body Area Network

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Index Terms

Computer Science

Wireless Communications
Keywords

Ultra Wide Band (UWB)  Wireless Body Area Network (WBAN)  Ion selective field effect transistors (ISFET)

ARM microcontroller

safe enema