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Performance improvement of a non-enzymatic glucose biosensor (Ag2O/CNT) by the introduction of nano-diamond and sago

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Electro-analytical methods have been broadly employed in monitoring a range of parameters in biomedical science. We have developed a novel approach for the fabrication of a non-enzymatic biosensor based on silver oxide/Nanodiamond/CNT to detect glucose by introducing sago as a natural hydrogel as the composite cross-linker in order to enhance the physical stability of the electrode (Ag2O/ND/CNT/Sago). A well-defined redox peak with a formal potential value of −0.68 V was observed in a phosphate buffer carrier (0.01 M, pH 6.8). The redox potentials shifted slightly with a change in concentration and scan rate, indicating an irreversible reaction without observing an oxidation peak. A change in glucose concentration caused the reduction peak to move towards more negative potentials with a maximum peak at around −1.1 V, suggesting the conversion of H2O2 to water. The performance and management of the two types of non-enzymatic glucose biosensors i.e. Ag2O/ND/CNT and Ag2O/ND/CNT/Sago were also evaluated in diabetes application. By adding sago as the crosslinking agent, the CV curves exhibited lower performance with a higher stability in comparison to Ag2O/ND/CNT since the activity of Ag2O/ND/CNT/Sago is deeply buried in a protective shell of the biopolymer making it difficult for direct electron transfer. The fabricated electrode demonstrated a fast detection response to glucose non-enzymatically in a concentration range from 1 to 100 mM with a good sensitivity. However, a negligible rise in current with the modified electrode (i.e. Ag2O/ND/CNT/Sago) was observed due to the absence of the catalytic activity of the electrode toward glucose reduction.

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Influence of female sex hormones on the pharmacokinetics of doxycycline

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For several reasons no two individuals can be considered identical and hence individualization of therapy is the current trend in treating the patients. Influence of menstrual cycle on the pharmacokinetics of Doxycycline. Twelve healthy female volunteers have been included in the study after obtaining written informed consent. The age ranged from 16 to 25 years.

Experimental design: The volunteer selection and recruitment will be carried out after obtaining informed consent from each volunteer. The drug administration will be done to each volunteer at 7 a.m along with a glass of water after an overnight fasting on 3rd, 13th and 23rd day of menstrual cycle. These saliva samples will be stored under frozen conditions until HPLC analysis. Female sex hormones like estrogen,progesterone,follicle stimulating hormone,luetinising hormones,are estimated in blankblood sample in vijaya diagnostics.

Results: In the present study the changes in estrogen levelsduring ovulatory phase have not shown any influence onAUCo-t of Doxycycline. Only AUCo-t of doxycycline showed an increasing trend with increasing levels of estrogen in ovulatary phase, but not in other phases. Eventhough the FSH levels differed significantly among volunteers during different phases FSH does not seem to influence overall pharmacokinetic behavior of Doxycyline during different phases. The present study indicated only the trend that the hormone levels may influence the pharmacokinetic behavior of the Doxycycline.

Conclusion: In the present study the changes in hormones have shown an increasing C-max,increasing AUCo-t of Doxycycline pharmacokinetics significantly in follicular phase than ovulatory and luteal phases among volunteers during different phases.In other pharmacokinetic properties like clearance, biological haif life,volume of distribution,mean residence time the change was not significant.

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