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First–Time Simulation of Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano Molecules Incorporation into the Nano Polymeric Matrix (NPM) by Immersion of the Nano Polymeric Modified Electrode (NPME) as Molecular Enzymes and Drug Targets for Human Cancer Cells, Tissues and Tumors Treatment under Synchrotron and Synchrocyclotron Radiations

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Abstract

In the current study, Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One) – Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules incorporation into the Nano Polymeric Matrix (NPM) by immersion of the Nano Polymeric Modified Electrode (NPME) as molecular enzymes and drug targets for human cancer cells, tissues and tumors treatment under synchrotron and synchrocyclotron radiations were studied.

Keywords: Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate), Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One), Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI), Nano Molecules, Simulation, Nano Polymeric Matrix (NPM), Immersion, the Nano Polymeric Modified Electrode (NPME), Molecular Enzymes, Drug Targets, Human Cancer Cells, Tissues and Tumors, Treatment, Synchrotron Radiation, Synchrocyclotron Radiation.

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1. Introduction

In the current study, Deoxyuridine Monophosphate (dUMP)[2] (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin [3] (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One) – Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules incorporation into the Nano Polymeric Matrix (NPM) by immersion of the Nano Polymeric Modified Electrode (NPME) as molecular enzymes and drug targets for human cancer cells, tissues and tumors treatment under synchrotron and synchrocyclotron radiations (Figure 1) were studied. In this regard, the development of Chemical Modified Electrodes (CEMs) is at present an area of great interest. CEMs can be divided broadly into two main categories; namely, surface modified and bulk modified electrodes. Methods of surface modification include adsorption, covalent bonding, attachment of polymer Nano films, etc. Polymer Nano film coated electrodes can be differentiated from other modification methods such as adsorption and covalent bonding in that they usually involve multilayer as opposed to monolayer frequently encountered for the latter methods. The thicker Nano films imply more active sites which lead to larger analytical signals. This advantage coupled with other, their versatility and wide applicability, makes polymer Nano film modified electrodes particularly suitable for analytical applications [5–31].

2. Materials, Research Methods and Experimental Techniques

Electrochemical polymerization offers the advantage of reproducible deposition in terms of Nano film thickness and loading, making the immobilization procedure of a metal–based electrocatalyst very simple and reliable for Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules–encapsulating Carbon nanotubes incorporation into the Nano Polymeric Matrix (NPM) by immersion of the Nano Polymeric Modified Electrode (NPME) as molecular enzymes and drug targets for human cancer cells, tissues and tumors treatment under synchrotron and synchrocyclotron radiations. Also, it must be notice that the nature of working electrode substrate in electropreparation of polymeric Nano film is very important, because properties of polymeric Nano films depend on the working electrode anti–cancer Nano materials. The ease and fast preparation and of obtaining a new reproducible surface, the low residual current, porous surface and low cost of Multi–Walled Carbon Nanotubes (MWCNTs) paste are some advantages of Carbon Paste Electrode (CPE) over all other solid electrodes [32–92].

[2]Deoxyuridine monophosphate (dUMP), also known as deoxyuridylic acid or deoxyuridylate in its conjugate acid and conjugate base forms, respectively, is a deoxynucleotide. It is an intermediate in the metabolism of deoxyribonucleotides. [1]

[3]**Vomitoxin**, also known as **deoxynivalenol** (**DON**), is a type B trichothecene, an epoxy–sesquiterpenoid. This mycotoxin occurs predominantly in grains such as wheat, barley, oats, rye, and corn, and less often in rice, sorghum, and triticale. The occurrence of deoxynivalenol is associated primarily with *Fusarium graminearum* (*Gibberella zeae*) and *F. culmorum*, both of which are important plant pathogens which cause fusarium head blight in wheat and gibberella or fusarium ear blight in corn. A direct relationship between the incidence of fusarium head blight and contamination of wheat with deoxynivalenol has been established [2, 3]. Deoxynivalenol has been implicated in incidents of mycotoxicoses in both humans and farm animals [2, 4].

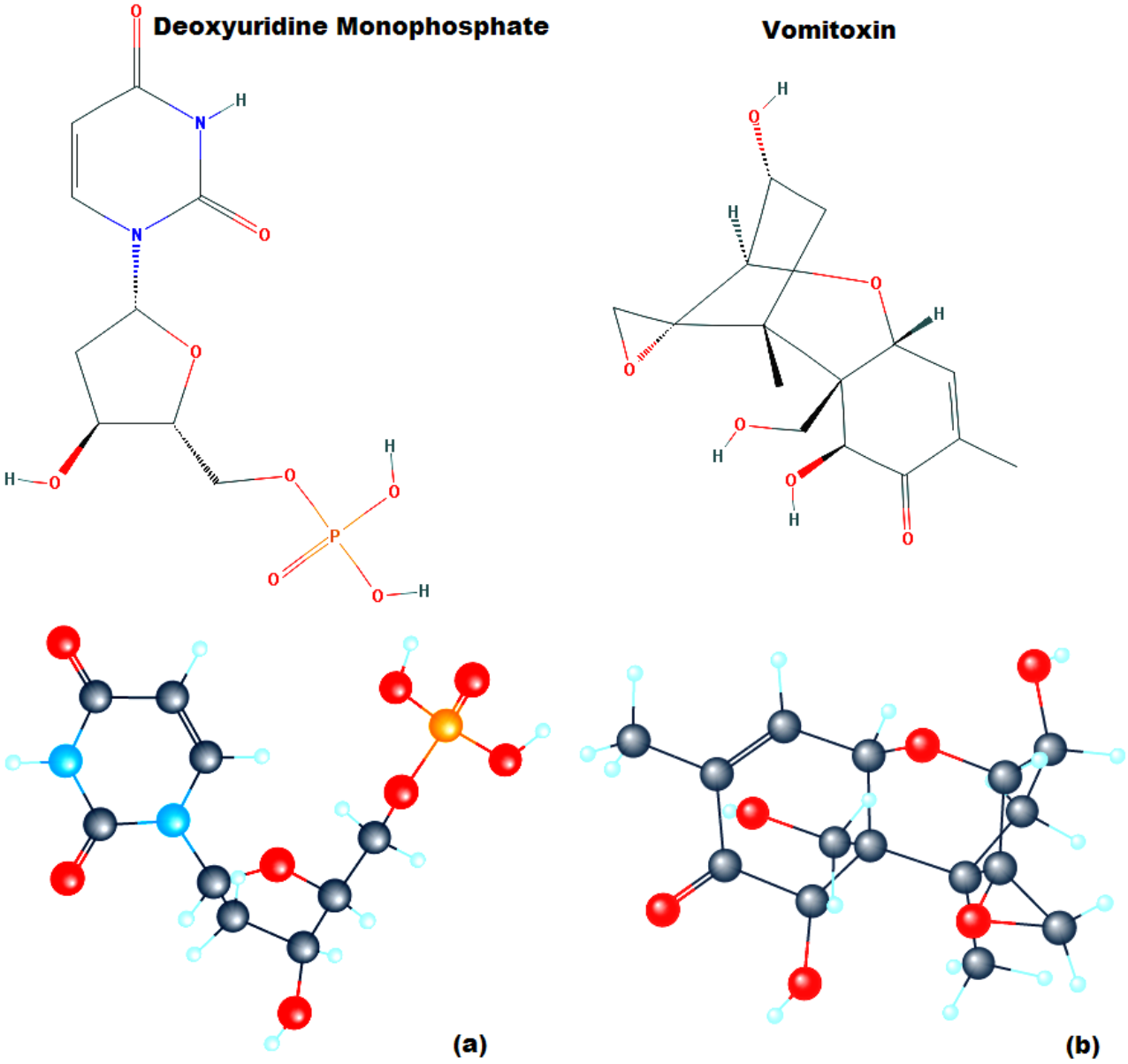

Figure (1): Molecular structure of (a) Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and (b) Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One) Nano molecules [217].

3. Results and Discussion

On the other hand, it has been shown that, macrocyclic complexes of Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules–encapsulating Carbon nanotubes are interest as modifying agents because in basic media Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and

Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules–encapsulating Carbon nanotubes redox centers show high catalytic activity towards the oxidation of small organic anti–cancer Nano compounds. The high–valence species of Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules–encapsulating Carbon nanotubes seem to act as strong oxidizing agents for low–electroactivity organic substrates. 1,2–Dioxetane (1,2–Dioxacyclobutane), 1,3–Dioxetane (1,3–Dioxacyclobutane), DMDM Hydantoin and Sulphobe as the anti–cancer organic intermediate products of methanol oxidation as well as formic acid, is important to investigate its electrochemical oxidation behavior in Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules–encapsulating Carbon nanotubes incorporation into the Nano Polymeric Matrix (NPM) by immersion of the Nano Polymeric Modified Electrode (NPME) as molecular enzymes and drug targets for human cancer cells, tissues and tumors treatment under synchrotron and synchrocyclotron radiations [93–217]. It should be noted that simulation of Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One) nano molecules–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) process under synchrotron and synchrocyclotron radiations with the passage of time is presented in Figures (2 and 3) for first time, respectively.

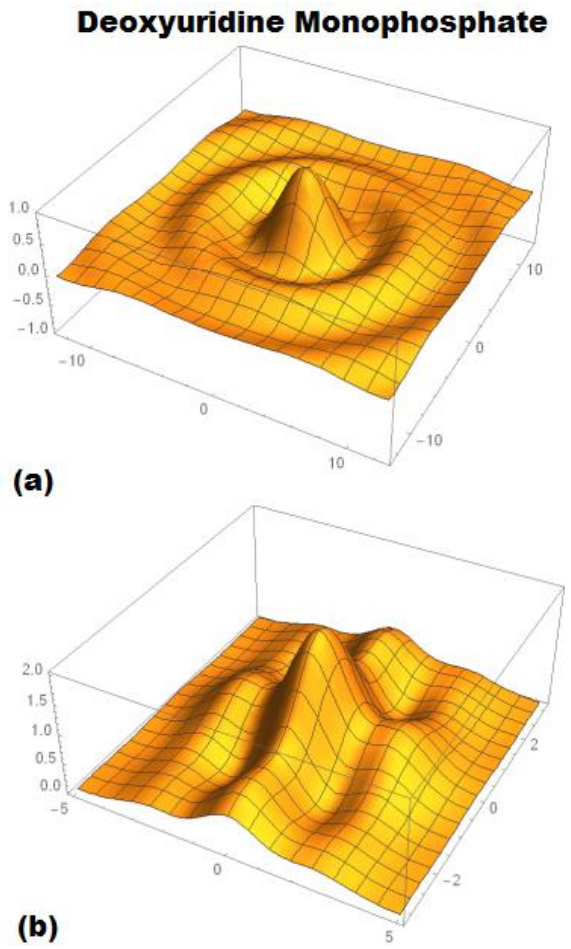

Figure (2): Simulation of Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) nano molecules–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) process under (a) synchrotron and (b) synchrocyclotron radiations with the passage of time.

In this regard, a first–time simulation is an attempt to model a real–life or hypothetical situation on a computer so that it can be studied to see how the Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) nano molecules incorporation into the Nano Polymeric Matrix (NPM) by immersion of the

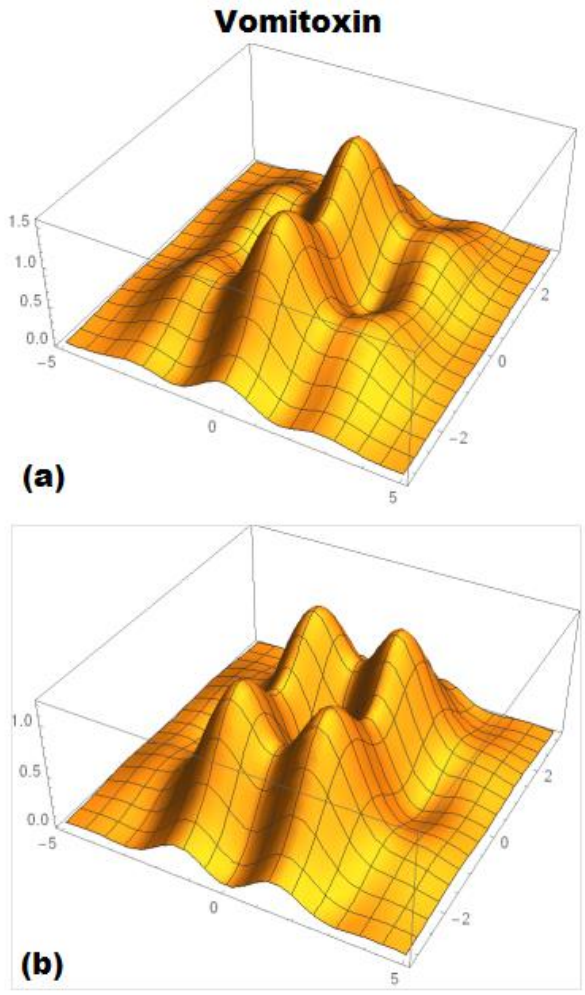

Figure (3): Simulation of Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One) nano molecules–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) process under (a) synchrotron and (b) synchrocyclotron radiations with the passage of time.

Nano Polymeric Modified Electrode (NPME) as molecular enzymes and drug targets for human cancer cells, tissues and tumors treatment under synchrotron and synchrocyclotron radiations work. By changing variables in the simulation, predictions may be made about the behaviour of the Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3, 7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) nano molecules incorporation into the Nano Polymeric Matrix (NPM) by immersion of the Nano Polymeric Modified Electrode (NPME) as molecular enzymes and drug targets for human cancer cells, tissues and tumors treatment under synchrotron and synchrocyclotron radiations. It is a tool to virtually investigate the behaviour of the Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3, 7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) nano molecules incorporation into the Nano Polymeric Matrix (NPM) by immersion of the Nano Polymeric Modified Electrode (NPME) as molecular enzymes and drug targets for human cancer cells, tissues and tumors treatment under synchrotron and synchrocyclotron radiations under study.

4. Conclusion

In this work, combination of the above mentioned advantageous features for the aim of Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3, 7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules–encapsulating Carbon nanotubes incorporation into the Nano Polymeric Matrix (NPM) by immersion of the Nano Polymeric Modified Electrode (NPME) as molecular enzymes and drug targets for human cancer cells, tissues and tumors treatment under synchrotron and synchrocyclotron radiations were decided. Furthermore, in this research, poly Nano films by electropolymerization at the surface of Multi–Walled Carbon Nanotubes (MWCNTs) paste electrode. Then, Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3, 7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano

molecules–encapsulating Carbon nanotubes were incorporated into the Nano Polymeric Matrix (NPM) by immersion of the Nano Polymeric Modified Electrode (NPME) in a solution were prepared. The modifier layer of Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules–encapsulating Carbon nanotubes at the electrode surface acts as a Nano catalyst for the treatment of human cancer cells, tissues and tumors under synchrotron and synchrocyclotron radiations. Suitability of this Deoxyuridine Monophosphate (dUMP) (Deoxyuridylic Acid or Deoxyuridylate) and Vomitoxin (Deoxynivalenol (DON)) ((3α,7α)–3,7,15–Trihydroxy–12,13–Epoxytrichothec–9–En–8–One)–Enhanced Precatalyst Preparation Stabilization and Initiation (EPPSI) Nano molecules–encapsulating Carbon nanotubes–modified polymeric Multi–Walled Carbon Nanotubes (MWCNTs) paste electrode toward the electrocatalytic treatment of human cancer cells, tissues and tumors under synchrotron and synchrocyclotron radiations in alkaline medium at ambient temperature was investigated.

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