



Biochemical Studies on Chitosan as Cisplatin Carrier in Hepatocellular Carcinoma in Rats

دراسات كيميائية حيوية علي الكيتوزان كناقل للسيسبلاتين في الفئران المصابه بسرطان الكبد

A Thesis

Submitted to Faculty of science, Ain Shams University for partial
Fulfillment of master's Degree in Biochemistry

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2019



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رسالة مقدمه إلي
قسم الكيمياء الحيويه – كلية العلوم – جامعة عين شمس
للحصول علي درجة الماجستير في الكيمياء الحيويه
من الطالبة

شيماء صابر الحسيني عبدالباقي

(بكالوريوس الكيمياء الحيويه/الكيمياء ٢٠٠٥)
مديره الجوده بشركة مياه الشرب والصرف الصحي بالفيوم

كلية العلوم

جامعة عين شمس

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Abstract:

Natural polymers of polysaccharide type like chitosan, which was used as a carrier for the several chemotherapies such as cisplatin which is more stable, bio adhesive, bioactive and more permeable. The chitosan was extracted from the shrimp shells by using the chemical reagents.

Anew carrier used for delivering the cisplatin to the carcinoma part of the liver tissue which is dual ligand binded with the chitosan as a carrier. The dual vector is composed from chitosan, lactobionic acid and glycyrrhetic acid in the presence of (EDC·HCl) and NHS for activating the carboxylic groups of glycyrrhetic acid and lactobionic acid through 2 main steps under normal conditions. In previous study, the results documented the potential effect of dual ligand for delivery the drug to the cancer part of the liver.

In this study the designed drug was been the cisplatin-alginate/dual ligand nanoparticles which loaded with strongest chemotherapy, cisplatin for treating hepatocellular carcinoma in rats. The results were been indicated that the nanoparticles have higher antitumor efficacy in the liver cancer treatment and lower side effect compared to free CDDP.

In conclusion, this designed drug was suppressing liver tumor tissue by releasing rapidly a high concentration of cisplatin inside the liver cancer cells, thus increasing the efficacy of the drug.

Keywords: GCGA: Glycyrrhetic acid- chitosan- lactobionic acid, HCC: Hepatocellular Carcinoma, Nanoparticles; Alginate, cisplatin, CDDP: cisplatin.

Acknowledgment:

Thanks are due first and last to *Almighty Allah* for guiding me in my whole life.

I would like to thank all people that directly or indirectly contributed to the success of this work.

It is really difficult for me to find words that can express my deep gratitude and sincere appreciation towards **Dr. Dina M. Seoudi**, Assistant Professor of Biochemistry, Faculty of Science, Ain Shams University, **Dr. Abdel-Rahman B. Abdel-Ghaffar**, Assistant Professor of Biochemistry, Faculty of Science, Ain Shams University and **Dr. Khaled G. Mohamed**, Assistant Professor of Medical Physiology, Medical Physiology Department, National Research Centre for their endless help, valuable suggestion, constant guidance sincere encouragement, valuable advice and criticism. It is a great honor for me to work under their supervision, continuous guidance, fruitful discussion, continuous encouragement and expert advice.

All words of my deep thanks and sincere gratitude are very small to **Dr. Islam Ahmed Hamed Khalil**, Assistant Professor of pharmaceuticals and industrial pharmacy, College of pharmacy and drug manufacturing, Misr university for science and technology, for helping me with free efforts and time, comments, active supervision and give me precious comments.

I would like to express my deep gratitude and sincere appreciation towards **Dr. Abeer Hamed Abdel-haleem**, Assistant Professor of

Acknowledgment

Biochemistry Department, National Research Centre & **Dr. Shymaa S. Medany** , Lecturer of physical chemistry, Chemistry Department, Faculty of science, Cairo university & **Dr. Ayman Mostafa**, Assistant Professor at Zoology Department, Faculty of science, Fayoum university and **Dr. Amany reyad**, Lecturer at Botany Department, Faculty of science, Fayoum university for helping me with free efforts and active supervision.

I would like to express my thankfulness to all my work members (Fayoum Drinking Water and Sanitation Company – central lab.-new azab plant) for their encouragement and support and providing me with all possible laboratory facilities to accomplish the practical part of this study, especially great thanks for **Dr. Abd allah abdelwahed** (chemist at atomic part of inorganic lab.), for great help me with free efforts & **Dr. Saber Dawood** (General Quality Manager) & **Dr. ahmed Mamdouh ahmed** (General Manager of central lab.)& **Dr. Mai Mostafa** (Microbiologist) and **Mr. Mohamed salah**(Technician at Inorganic lab.).

Special more great thanks and love for **my father & my mother** and to my lovely sons **Malek** and **Yazeed** that are the most beautiful event in my whole live.

And finally, I would like to dedicate this work to every member of my faithful family (**Abdel bakey saber, Marwa saber, Ahmed saber, Dr. walid saber, Rania abdelbakey, Sameh abdefatah, Omar abdelbakey, Ahmed sameh, Youssef sameh, yara abdelbakey and Mariam sameh**) for their endless love, support and encouragement.

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