إرشادات سريعه ليكيفية عمل ملصق علمي
كيم 492

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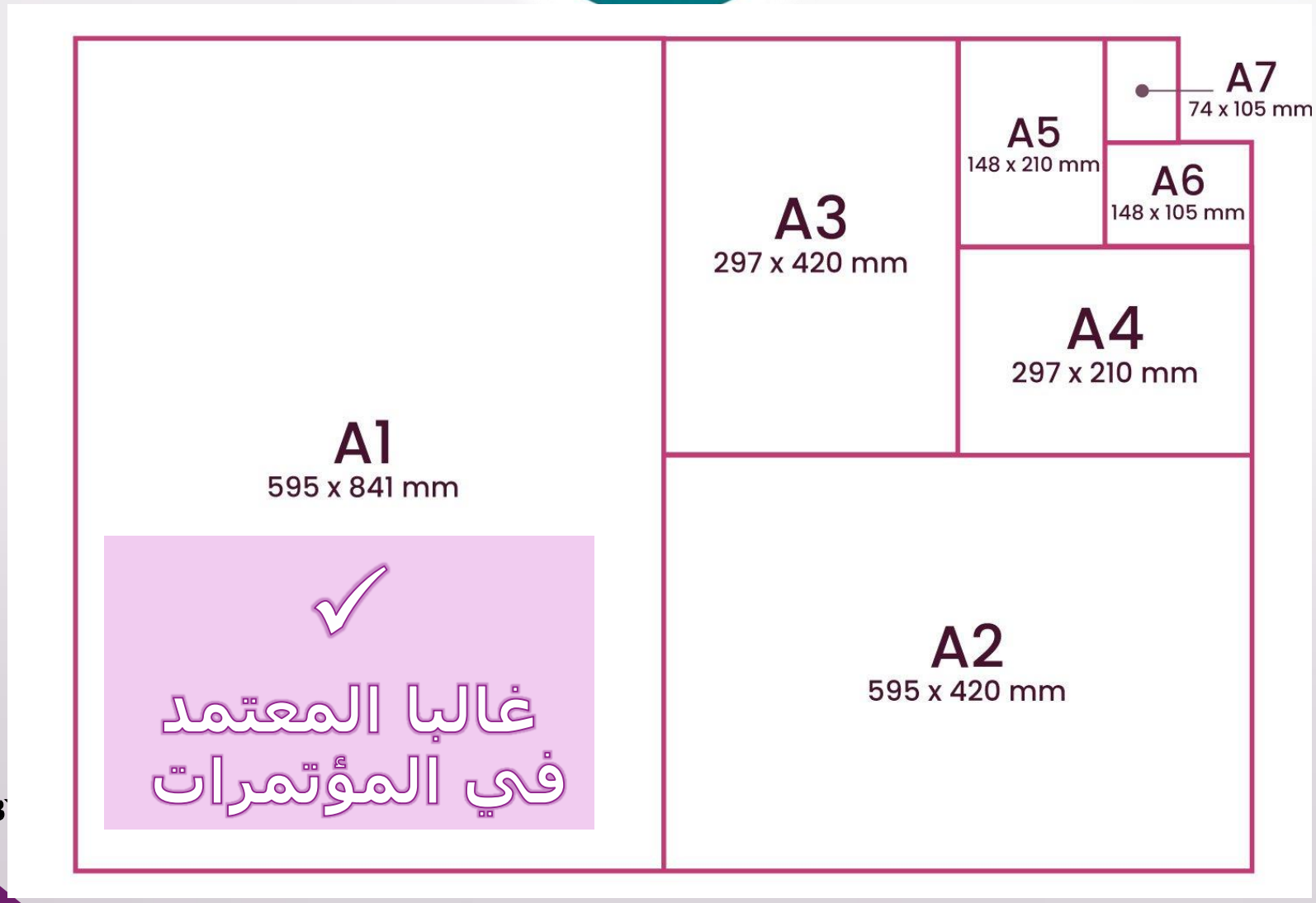
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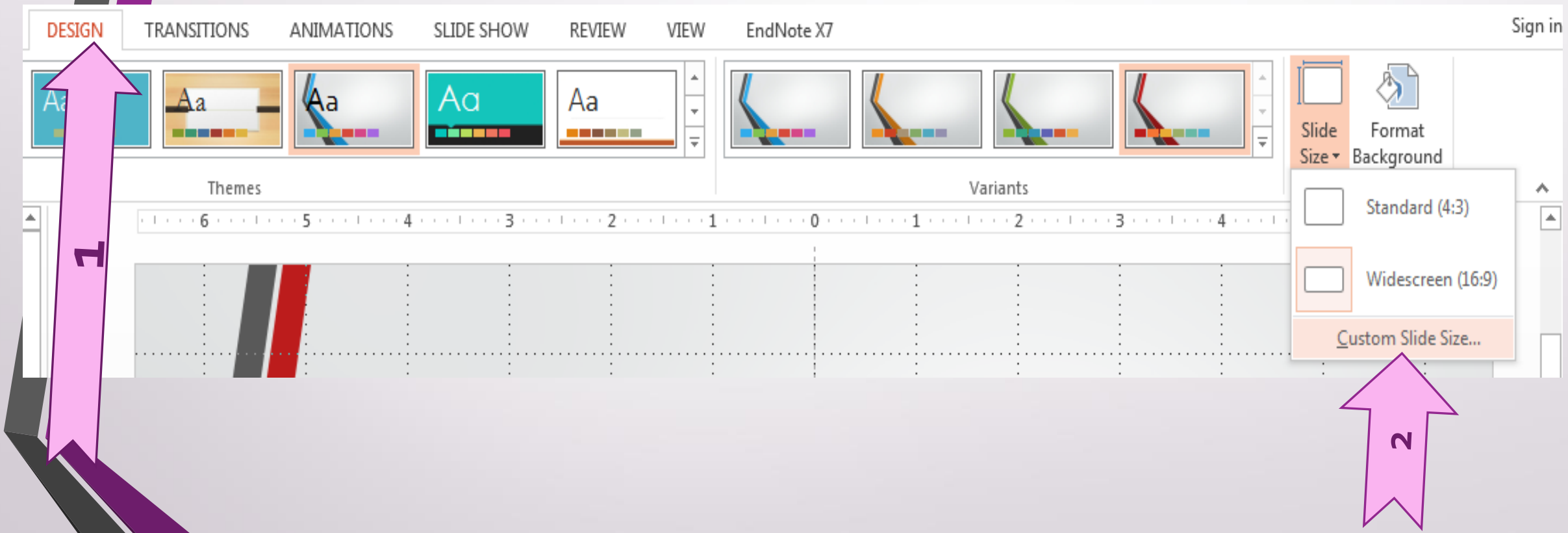
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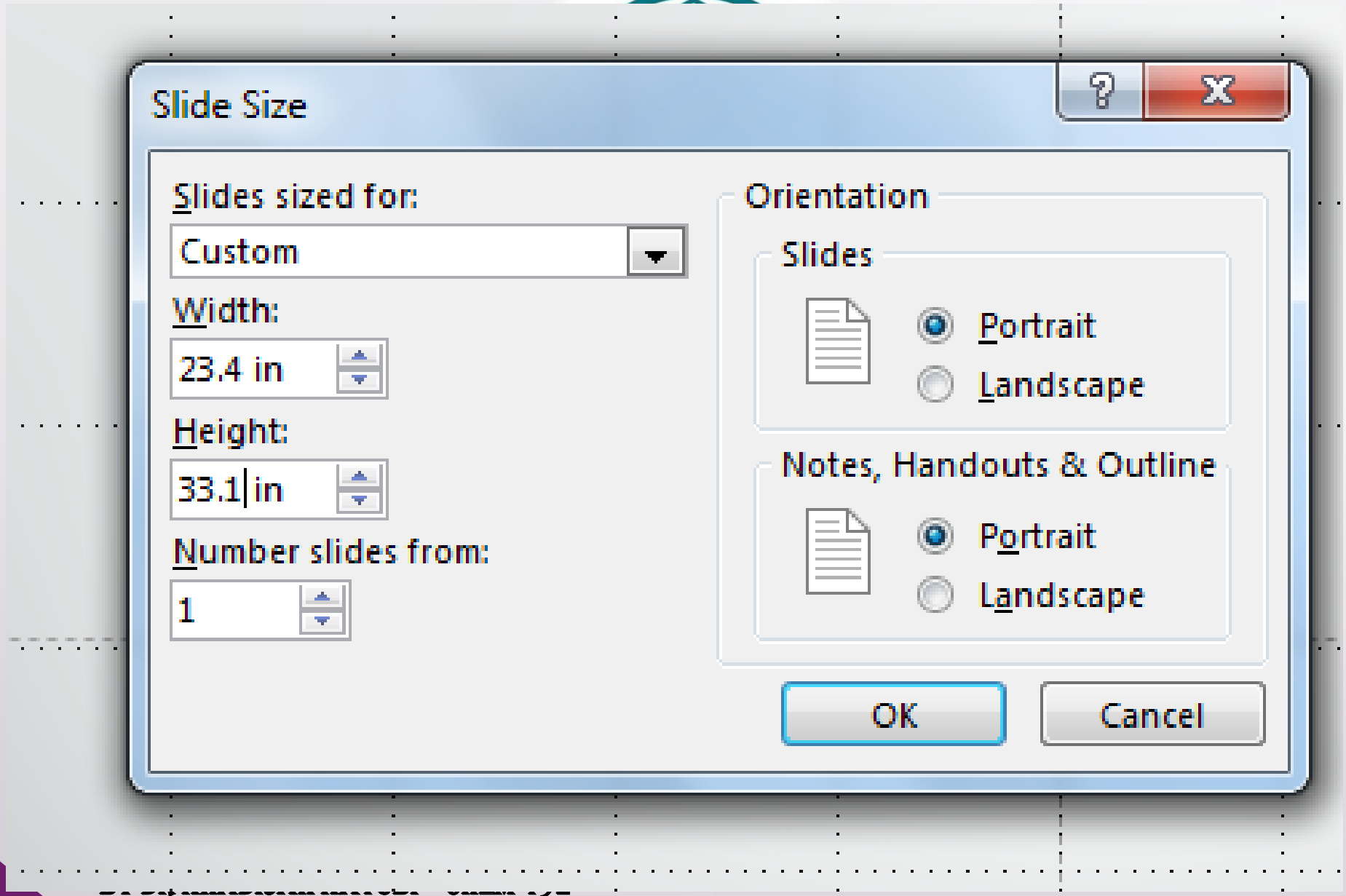
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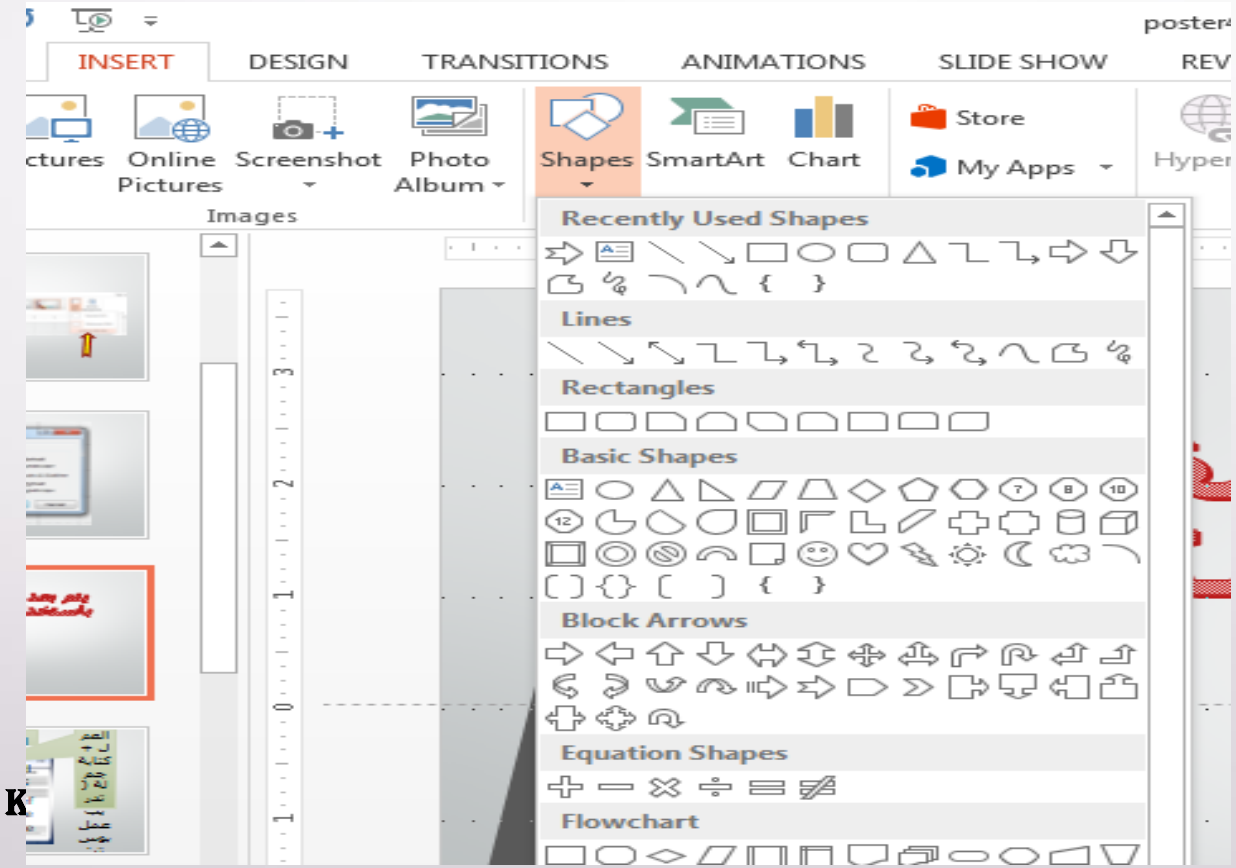

BY DR KHADIJAH K

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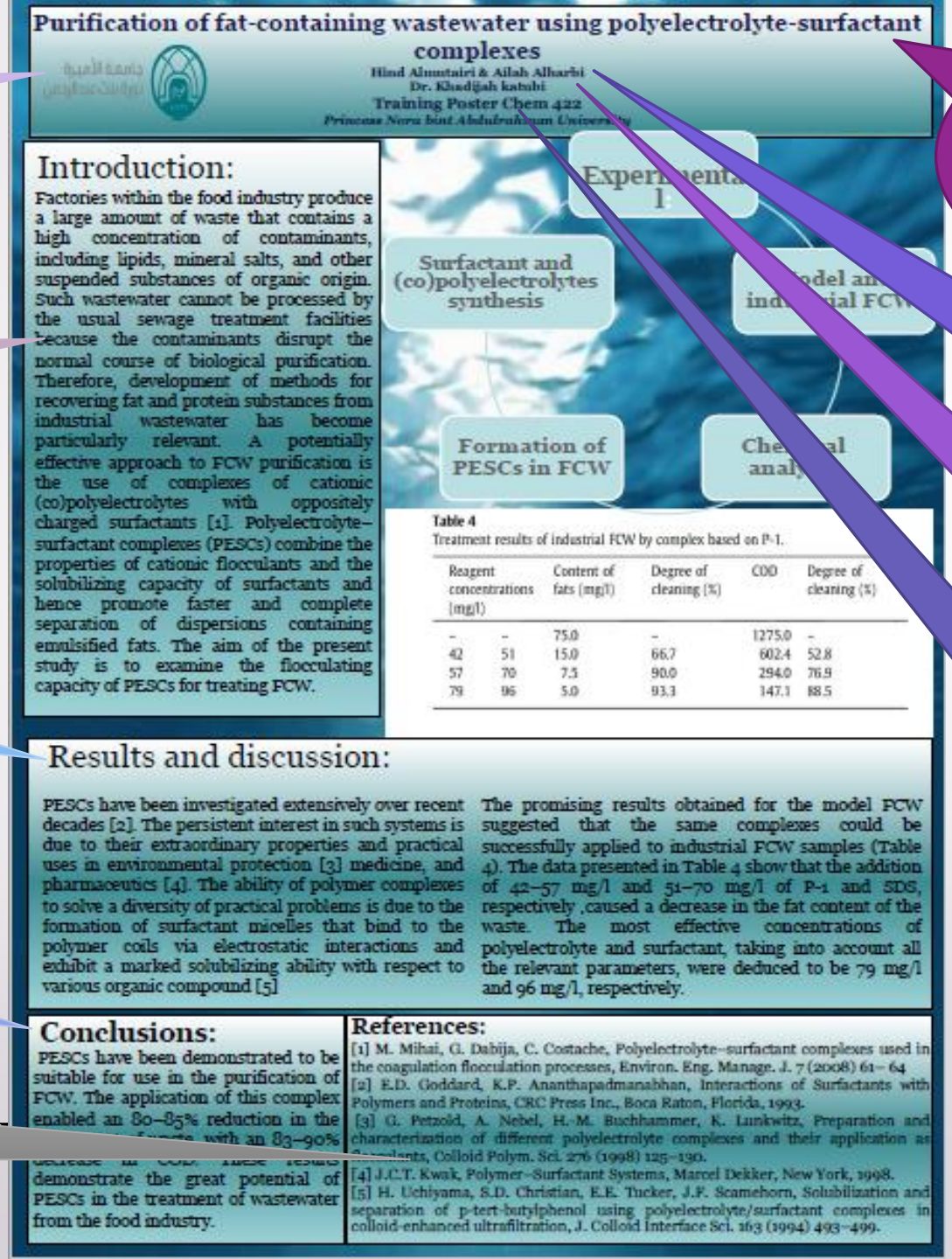

Purification of fat-containing wastewater using polyelectrolyte-surfactant complexes

Hind Almutairi & Ailah Alharbi
Dr. Khadijah katubi
Training Poster Chem 422
Princess Nora bint Abdulrahman University

Introduction:

Factories within the food industry produce a large amount of waste that contains a high concentration of contaminants, including lipids, mineral salts, and other suspended substances of organic origin. Such wastewater cannot be processed by the usual sewage treatment facilities because the contaminants disrupt the normal course of biological purification. Therefore, development of methods for recovering fat and protein substances from industrial wastewater has become particularly relevant. A potentially effective approach to FCW purification is the use of complexes of cationic (co)polyelectrolytes with oppositely charged surfactants [1]. Polyelectrolyte–surfactant complexes (PESCs) combine the properties of cationic flocculants and the solubilizing capacity of surfactants and hence promote faster and complete separation of dispersions containing emulsified fats. The aim of the present study is to examine the flocculating capacity of PESCs for treating FCW.

Experimental

Surfactant and (co)polyelectrolytes synthesis

Formation of PESCs in FCW

Table 4
Treatment results of industrial FCW by complex based on P-1.

Reagent concentrations (mg/l)		Content of fats (mg/l)	Degree of cleaning (%)	COD	Degree of cleaning (%)
–	–	75.0	–	1275.0	–
42	51	15.0	66.7	602.4	52.8
57	70	7.5	90.0	294.0	76.9
79	96	5.0	93.3	147.1	88.5

Results and discussion:

PESCs have been investigated extensively over recent decades [2]. The persistent interest in such systems is due to their extraordinary properties and practical uses in environmental protection [3] medicine, and pharmaceutics [4]. The ability of polymer complexes to solve a diversity of practical problems is due to the formation of surfactant micelles that bind to the polymer coils via electrostatic interactions and exhibit a marked solubilizing ability with respect to various organic compound [5]

The promising results obtained for the model FCW suggested that the same complexes could be successfully applied to industrial FCW samples (Table 4). The data presented in Table 4 show that the addition of 42–57 mg/l and 51–70 mg/l of P-1 and SDS, respectively ,caused a decrease in the fat content of the waste. The most effective concentrations of polyelectrolyte and surfactant, taking into account all the relevant parameters, were deduced to be 79 mg/l and 96 mg/l, respectively.

Conclusions:

PESCs have been demonstrated to be suitable for use in the purification of FCW. The application of this complex enabled an 80–85% reduction in the [illegible] with an 83–90% [illegible] demonstrate the great potential of PESCs in the treatment of wastewater from the food industry.

References:

[1] M. Mihai, G. Dabija, C. Costache, Polyelectrolyte–surfactant complexes used in the coagulation flocculation processes, Environ. Eng. Manage. J. 7 (2008) 61–64
[2] E.D. Goddard, K.P. Ananthapadmanabhan, Interactions of Surfactants with Polymers and Proteins, CRC Press Inc., Boca Raton, Florida, 1993.
[3] G. Petzold, A. Nebel, H.-M. Buchhammer, K. Lunkwitz, Preparation and characterization of different polyelectrolyte complexes and their application as [illegible], Colloid Polym. Sci. 276 (1998) 125–130.
[4] J.C.T. Kwak, Polymer–Surfactant Systems, Marcel Dekker, New York, 1998.
[5] H. Uchiyama, S.D. Christian, E.E. Tucker, J.F. Scamehorn, Solubilization and separation of p-tert-butylphenol using polyelectrolyte/surfactant complexes in colloid-enhanced ultrafiltration, J. Colloid Interface Sci. 163 (1994) 493–499.

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BY DR KHADIJAH KATUBI CHEM 492

مثال تطبيقي

Renewable and Non-renewable Energy

Chem492 Princess Nourah bint Abdulrahman University
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Dr Khadijah bint Mohammedsaleh Katubi

Introduction

Renewable energy is defined as energy that is produced by natural resources—such as sunlight, wind, rain, waves, tides, and geothermal heat—that are naturally replenished within a time span of a few years(Kantenbacher et al., 2018). The Non-Renewable energy (NRE) is energy which is taken from the sources that are available on the earth They are called the NRE because they cannot be re-generated within a short span of time(Hossain, 2012).

Solar energy

Solar power is a general term for generating power , whether electrical or as heat This abundant source of energy can be utilized directly by solar thermal or photovoltaic systems (Quaschning, 2005).

Wind energy

Is an indirect form of solar energy .The actual conversion process uses the basic aerodynamic force of lift which first produces mechanical energy and then turns it into electricity in a generator(Manwell, McGowan and Rogers, 2010).

Hydro energy

Hydro Energy(HE) is a renewable, sustainable and clean energy in the other alternative energy sources(Yuksel, Arman and Sennaarr, 2016). Hydropower is the vital source of producing electricity around the globe(Parvez et al., 2021).

Tidal energy

Tidal Energy(TE) is the result of the movement of ocean water volumes caused by the in uence of the moon and sun lesser extent(Espina-Valdés et al., 2019).It includes the potential energy derived by height changes in sea level, harnessed in tidal barrages(Espina-Valdés et al., 2019).

Geothermal energy

Geothermal energy is the most used renewable energy worldwide, along with biomass energy it is a clean and sustainable source of energy (Ganz et al., 2019) .Renewable energy is most used worldwide along with hydropower and biomass(Atia et al., 2017).

Biomass energy

Biomass is the biological material that comes from living plants and provides about 14% of the global energy demand. Increasing the use of biomass resources can help reduce society's dependence on fossil fuels (Du et al., 2018).

Oil

Crude oil is an organic liquid substance often found below the Earth's surface (Mackay, 1976).

Natural gas

Natural gas is a fossil fuel found in nature reserves, associated or not with petroleum(Canyon Hydro et al., 2013).

Coal

Coal is a mineral which consists of carbon, oxygen and hydrogen(Du et al., 2020).

Nuclear energy

The electricity generated through the use of nuclear fission(' Nuclear power @ energyeducation.ca', no date).

Conclusion

This paper reviews the Renewable energy RE in all its sources. Non-renewable energy NRE is energy derived from energy sources. Nuclear power is achieved by the use of a nuclear reactor in an external combustion engine Geothermal energy is the most used the RE worldwide along with hydropower and biomass as it is a clean and sustainable source of energy. Hydropower is currently the most common form of the RE and plays an important part in global power generation.The sun is by far the most significant source of the RE Solar power is a general term for generating power. Natural gas known as methane gas, oil the important type known Crude oil.

References

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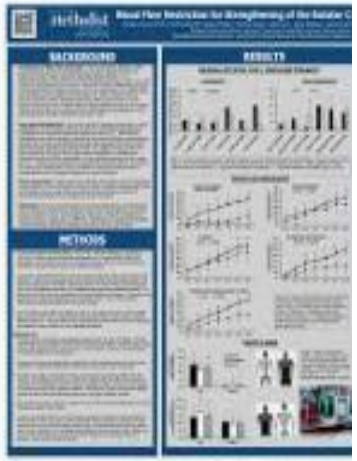

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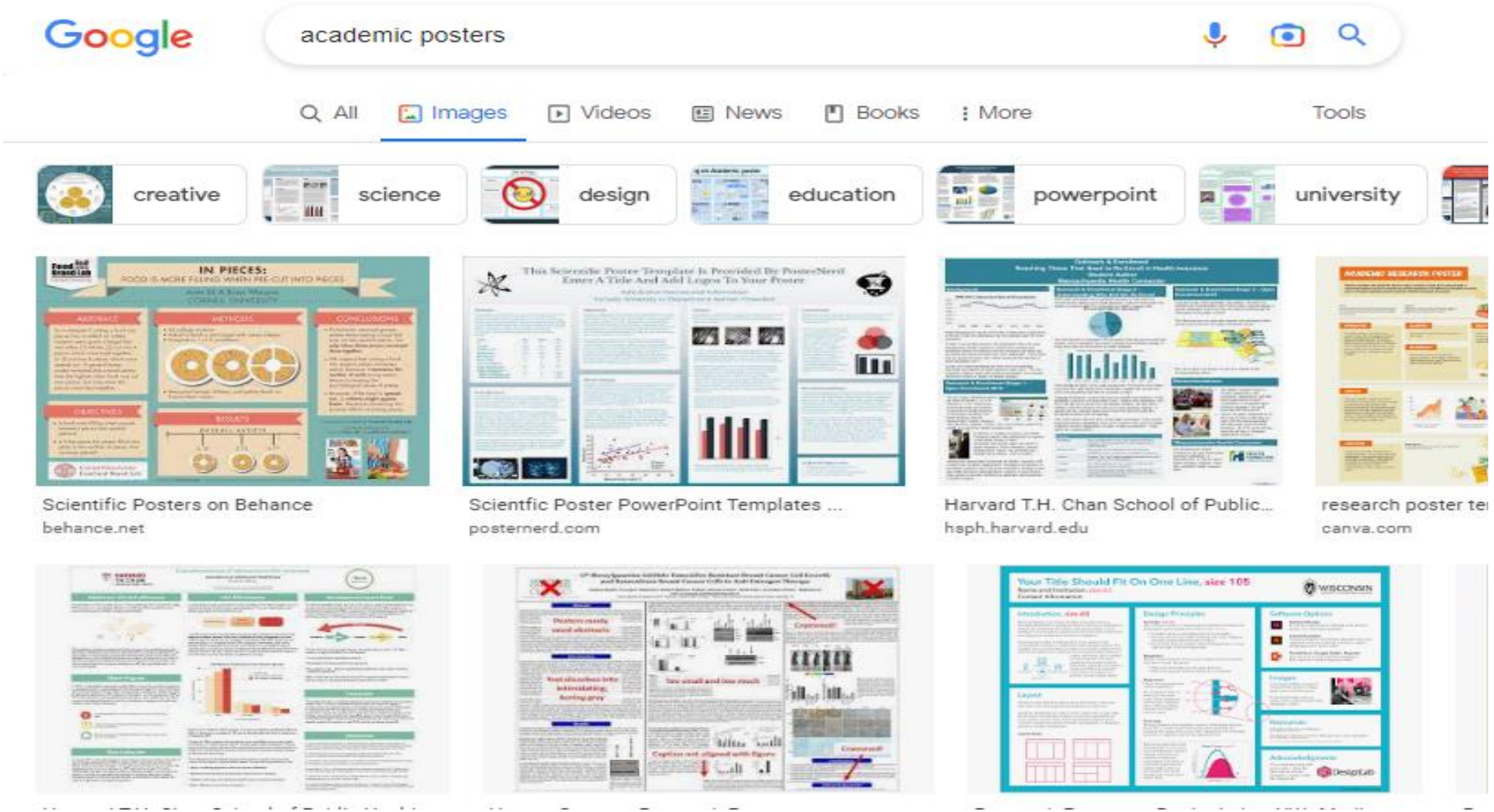
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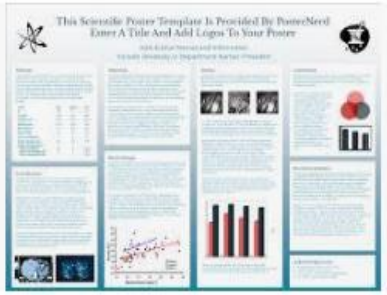
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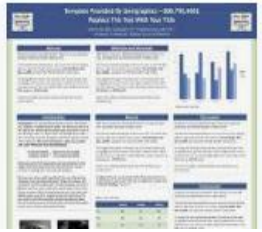

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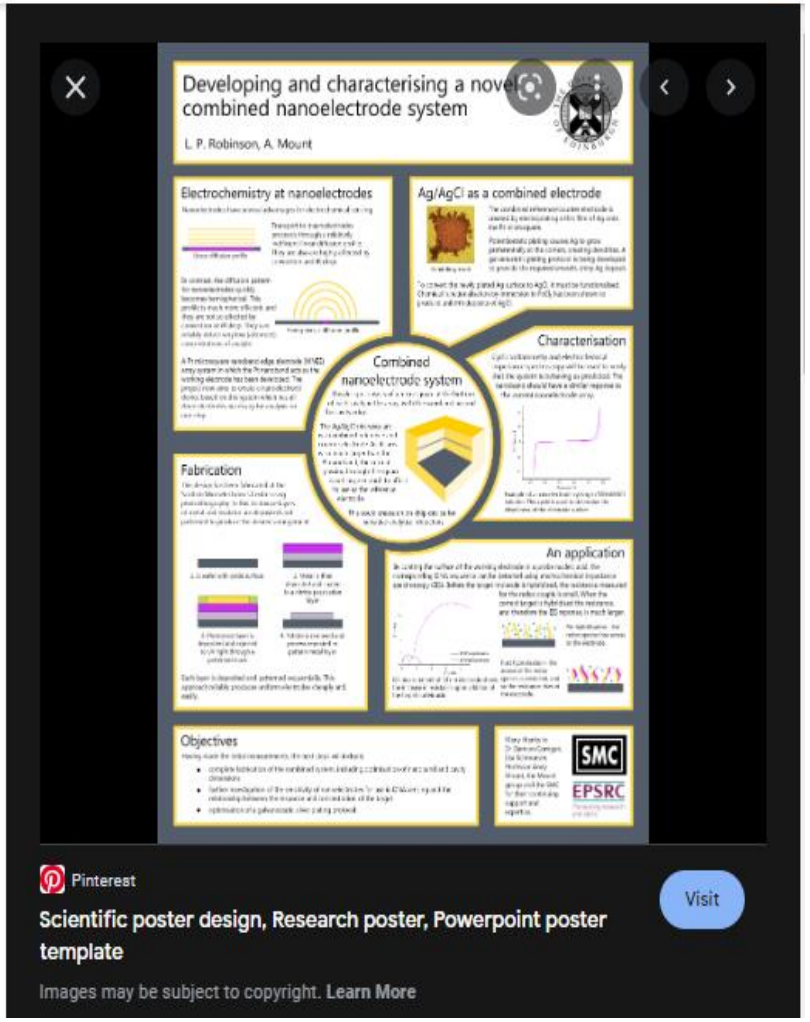

بعض الامثله للملصق العلمي

Crystal Structure and Biological Evaluation of Two Novel Organic-Inorganic Hybrid Materials as Antitumor Agents in the Treatment of Liver Cancer

Sara Alturki & Lama BinOwais Dr.khadijah Katubi
Mechanisms of Inorganic Reactions(Chem 422m-training)
Princess Nora bint AbdulRahman University

1-Introduction

Despite remarkable progress in the evolution of biological medicine field and understanding of the origin of the de diseases, the scientists fail to obtain effective methods for treating some diseases such as cancer. Nowadays, it has been widely recognized that cancer is one of the most serious threat to the health of people worldwide which could cause millions of deaths every year [1].

The cancer cell resistance to anticancer agents and the toxicity of modern chemotherapy make the sciences worldwide search for new drugs and cure methods for such an insidious disease [2] The design and fabrication of inorganic-organic hybrid materials have drawn much interest in the last twenty[3-5]. Recent literatures have demonstrated that the N donor imidazole ligand is a good coordinating ligand in the synthesis of organic-inorganic hybrid materials, which may adopt many different types of coordinating modes, for instance cocrystal, monodentate chelating, and mutidentate bridging in the anti-anti, syn-syn, and syn-anti arrangement [6, 7].

2-experimental(method)

2.1. Instruments and Chemicals: The diffractometer was used to collect the Powder X-rav diffraction (PXRD)curves. An Oxford Xcalibur E diffractometer was employed to collect the single crystal X-ray diffraction data. model 240C element analyses (C, H, and N) results.

2.2. The Preparation Methods of Compounds 1 and 2were mixed in a 25 mL of Teflon-lined stainless steel vessel, kept at 140°C for 72 hours. After the reaction time is out, the system is left until the oven return to room temperature. The black block-shape crystals were collected, cleaned with flowing deionized water , and air dried .

2.3. Structural Analysis through the X-Ray Diffraction Technique.

3. Results and Discussion

3.1. Molecular Structure

3.2. PXRD Patterns.

3.3. In Vitro Cytotoxicity Study against the Cancer Cells.

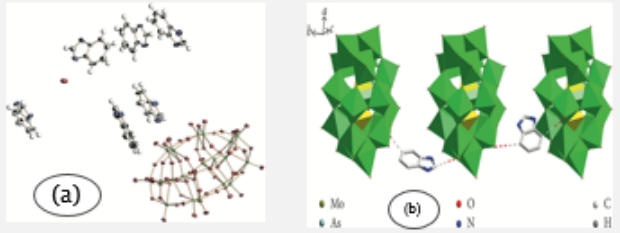

Figure 2: (a) An ORTEP drawing for the molecular unit of **1** in 50% thermal ellipsoids; (b) a drawing with polyhedral and ball-stick pattern for the one-dimensional chain in complex **1** by H-bonds; (c) a picture showing the H-bond interaction between the 2D layers.

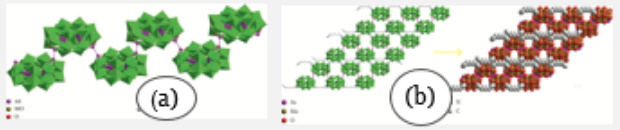

Figure 1: (a) The picture with ball-stick and polyhedral fashion shows the 1D chain of **2** by hydrogen bonds; (b) 2D layered framework of **2** formed by hydrogen bonds.

4. Conclusion

The in vitro cytotoxicity experiments demonstrate that as-prepared compounds revealed potent cytotoxicity toward the three human liver tumor cell lines (SMMC7721, Bel-7402, and MHCC97) as similar to that of the reference drug, which also indicates their potential use as antitumor drugs.

5-References

[1] X. Du, Z. Shi, Z. Peng et al., "Acetoacetate induces hepatocytes apoptosis by the ROS-mediated MAPKs pathway in ketotic cows," *Journal of Cellular Physiology*, vol. 232, no. 12, pp. 3296–3308, 2017.

[2] X. Du, Y. Zhu, Z. Peng et al., "High concentrations of fatty acids and β-hydroxybutyrate impair the growth hormone-mediated hepatic JAK2-STAT5 pathway in clinically ketotic cows," *Journal of Dairy Science*, vol. 101, no. 4, pp. 1–12, 2018.

[3]J. Li, X. H. Ji, and J. T. Li, "Two new inorganic anions directed Zn (II)-tetrazole frameworks: syntheses, structures and photoluminescent properties," Journal of pp. 22-25, 2017.

[4] J. Li and J. T. Li, "A luminescent porous metal-organic framework with Lewis basic pvridvl sites as a fluorescent chemosensor for TNP detection," Inorganic Chemistry pp. 51-54, 2018

[5] W. Gao, F. Liu, X. M. Zhang, J. P. Liu, and Q Y. Gao, "Four 3D coordination polymers based on layers with single syn-anti carboxylate bridges: synthesis, structures, and magnetic properties," RSC Advance, vol , no. 25, pp. 14101-14108, 2018.

[6] D. Chen, Y. Zhong, C. Zhang, D. Xu, and Z Lin, "Dual-ligand approach for the solvent free synthesis of indium-based coordination polymers, Communications, vol. 92, View at Publisher .View at Google Scholar Chemistry pp. 74-77, 2018 Inorganic.

[7] P Köse Yaman and O. Z. Yeşilel, and "Hydrothermal characterization of cobalt(II), nickel(II) and zinc(II) coordination polymers with 2,2'- dimethylglutarate pyridyl)ethane, Polyhedron, vol. 148, pp 189-194, 2018.

Changing of Cations Concentrations in Waters of Polluted Urban RiverON THESE LINES HERE

Wejdan bin noman and Waad Altwaijri
Dr.khadijah katubi
Princess Nourah Bint Abdulrahman University Training Poster Chem 422

BACKGROUND

It is important to use fast methods of water quality monitoring in order to detect pollution as soon as possible. This will help to find the source of pollution and prevent illicit discharge of wastewaters in future. In order to control water quality measurement of water specific electric conductivity (k) can be used. Electric conductivity has been investigated as marker of contamination from wastewaters discharges [2 – 6]. For natural surface waters in the North-Western part of Russia (to which the Okhta belongs) small or moderate concentrations of inorganic salts are usual [7]. This is explained by feeding of rivers mainly from snow and rain. Salts from the soil in their basins had been washed out during thousands of years with often rains and meltwaters. Calcium ions and hydrocarbonates are prevailing over other ions [7, 8] in this region. Aim of the present work was to study the role of several cations in formation of electric conductivity in polluted urban river Okhta.

Materials and Methods

Water Samples

1.Water samples were collected from the Okhta. Average flow rate of the Okhta was 5.18 m3/s and sewerage inflow was esteemed as 1.36 m3/s [1].

2.Sampling points were marked as O1 – O17.

3.Water samples of about 1 liter were collected from July 2013 to March 2014.

Chemical Analysis

Specific electric conductivity of water (k) was measured at the day of sampling. Concentrations of inorganic cations (potassium, sodium, magnesium, calcium) were determined.

Results and Discussion

In order to esteem background values for natural (not polluted) waters of the Okhta data from [7] could be used. They include results of regular chemical analysis of water collected at various seasons from the Okhta before (upstream). Data in Table 1 show that during periods of low and high water flow rateconcentrations of main ions changed not more than one order of magnitude [7].

Concentration	Ca^{2+}, (mg/L)	Mg^{2+}, (mg/L)	$K^{+}+Na^{+}$, (mg/L)	$HCO3^{-}$, (mg/L)	Cl^{-}, (mg/L)	$SO4^{2-}$ (mg/L)	$NO3^{-}$ (mg/L)	$NO2^{-}$ (mg/L)
Okhta	406-9.6	0.3-4.0	4.0-29.0	5.5 –56.7	4.3 –16.3	10.9 –22.9	1.0 –3.0	0.02 –0.47

Table 1. Ranges of main ions concentrations in the Okhta at various seasons in 1946-1965 [7].

Concentration	Ca^{2+}, (mg/L)	Mg^{2+}, (mg/L)	K^{+}, (mg/L)	Na^{+}, (mg/L)	IC, (mg/L)	$HCO3^{-}$, (mg/L)	TN, (mg/L)	k, (mkSm/cm)
Okhta	14 –196	12 –857	3 –32	14 –289	3 –38	14 –192	0.3 –4.5	40 – 725

Table 2. Ranges of parameters of water samples from the Okhta in 2013-2014.

Chemical analysis of samples from the Okhta showed that concentrations of cations and specific electric conductivity of water (k) varied 1–2 orders of magnitude with time and place. Maximal values in Table 2 were significantly higher than in Table 1, demonstrating influence of pollution from the city on water content. data for the are shown at Fig. 2. that molar concentration of sodium was maximal among other inorganic cations.

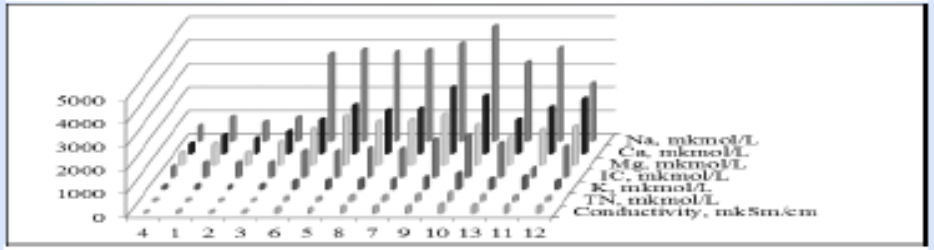

Figure 1. Parameters of the Okhta water samples from one series. Numbers of sampling points (on x axis) are placed in order of water flow. In Table 3 molar ratios of four inorganic cations are shown for selected points of sampling.

Sample	September 2013					November 2013					March 2014				
	R_K	RNa	RMg	RCa	K	R_K	Rna	RMg	RCa	k	R_K	RNa	RMg	RCa	k
3	4	33	33	30	68	-	-	-	-	-	3	27	37	33	54
6	4	53	22	20	175	-	-	-	-	-	4	47	24	25	141
8	5	48	24	23	238	7	41	24	29	122	-	-	-	-	-
7	5	48	24	23	244	7	41	23	29	123	-	-	-	-	-
9	5	44	23	29	252	6	33	23	38	143	4	37	25	34	186
10	7	51	18	25	334	4	58	16	22	725	4	53	18	24	263
11	6	50	19	25	296	5	39	25	32	229	4	42	21	32	252
12	5	37	24	34	254	6	46	20	28	231	4	40	25	31	239
15	-	-	-	-	-	5	44	22	29	295	5	44	24	27	281

Table 3. Ratios of inorganic cations (K, Na, Mg or Ca) molar concentration to sum of inorganic cations molar concentrations (in %) and specific electric conductivity k (in mkSm/cm) in water samples from the Okhta

It can be seen from Table 3 that increasing of water conductivity led to increasing of molar fraction of sodium and in most cases decreasing of molar fractions of other cations.. But for river Okhta we also observed decreasing of parameters downstream the river flow. It could be explained by dilution with less polluted water from other tributaries. In general the received data support the idea of the leading role of wastewaters in changing of water electric conductivity and cations concentrations for the studied river.

CONCLUSIONS

In general the data support the idea of the leading role of wastewaters in changing of water electric conductivity and cations concentrations for the studied river. Electric conductivity and RNa could be used to distinguish between polluted and not polluted waters in the Okhta. You can also make this box shrink or grow with the amount of text. Double click this text box, go to the "Text Box" tab, and check the option "Resize AutoShape to fit text".

REFERENCES

1. Wastwater discharge and treatment in St.Petersburg Stroyisdat, 418 p. (2002)
2. D. Chalupová, P.Havlíková, B. Janský, Environmental Monitoring and Assessment, 184, pp.6283–6295 (2012)
3. M.Y.Thompson, D.Brandes, A.D.Kney, Journal of Environmental Management, 104, pp. 152– 157 (2012)
4. A.J. Stewart, Environmental Management, 27, pp. 37–46 (2001)
5. D.N.R. De Sousa, A.A. Mozeto, R.L. Carneiro, P.S. Fadini, Science of The Total Environment, 484, pp. 19-25 (2014)
6. F.Bonvin, R.Rutler, N.Chèvre, J. Halder, T. Kohn, Environmental Science and Technology, 45 (11), pp. 4702–4709 (2011)
7. Resursy poverkhostnyh vod SSSR. Tom 2, Gidrometeoizdat, pp. 463-518 (1972)
8. E.Ya.Yakhnin, S.G.Gumen, E.L.Proletarskaya, A.V. Shubin, I.V.Sycheva, Ecologicheskaya Khimiya, 8 (3), pp. 145-154 (1999)

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Nanotechnology and water purification: Indian know-how and challenges (training)

Amal Altayyash & Faten Alsamhan
Dr.Khadijah Katubi
Mechanisms of Inorganic Reactions (Chem 422m)

Introduction

Water contamination being ubiquitous problem across the world. A significant strata of population worldwide are still struggling to get drinkable water. This demand to develop technologies to provide clean water at affordable price is unveiling the need of rigorous research in this area. There are several technologies available for removal of persistent as well as emerging pollutants from water [1]. Nanotechnology-based technology are providing the promising solution because of its extraordinary characteristics like large surface area, low cost maintenance and reuse, etc. Several S & T Governmental and Non-Governmental organisations came up with interventions for water contamination removal and few of them are commercially available. The available technologies seem to provide a promising solution for these continual water contamination issues like arsenic, fluoride, heavy metals, halogenated aromatics, nitrates, phosphates, salinity, waste water treatment and monitoring of water quality. This paper provides the comprehensive overview of state of the art nano material-based technologies available for water purification in India.

The current concern in India: water crisis

India being at 141st position among 180 countries in terms of Environmental Performance Index (2016) indicates an alarming situation and in need of effective technologies to sustain life. To ensure a positive and lasting impact on water conservation and management, it is important to identify main causes of the deteriorating situation.

1 Water resource usage

Drinking water sources for rural as well as urban population can be divided into four different categories as follows: surface water, improved water, unimproved water and piped water. According to JMP estimates of water coverage in India, percentage coverage of water sources were accounted which highlights the fact that 5% of drinking water is still used from unimproved sources. Surface water used for drinking purpose diminished because of pollution sources like industrial wastewater in receiving body of water such as stream, estuary and fresh water bodies.

2 Population

Growth patterns of the population are directly related to the availability of water. Industrialization is needed for the growing population and migrating horde from rural to urban areas of the country. Beyond the demographic window, diminishing fresh water resources are the focus of the economy. Further, 377.1 million people live in cities out off 1.2 billion, and it has been predicted that in the next two decades, 225 million people will be added to this urban population (Balasubramanian H. 2014) (Figs. 1).

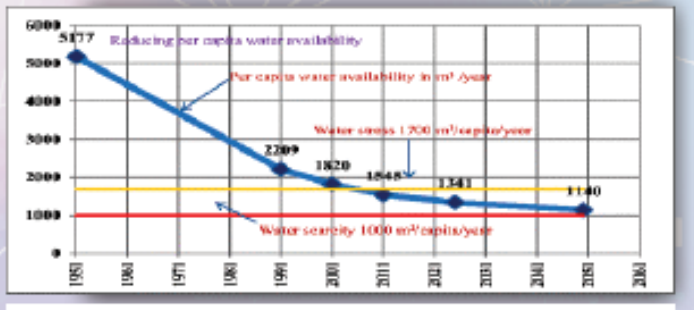


Fig. 1: Water availability scenario in India. Source: presentation on Ministry of Water Resources, RD & GR: presented before new Secretary (WR, RD & GR), Sh. Shashi Shekhar on 09.06.2015 (Shekhar S. 2015).

Nanotechnology applications in water purification

From the past few decades, newer technologies and emerging sciences have changed the picture of purification technologies as mentioned. Evolution of nanotechnology with a number of adsorption, photo-catalytic and antibacterial activity has undergone peculiar advancements in water sector. Being an emerging field, a number of nano-materials have been developed for the purification applications. Indian researchers are also working out in the development of technologies involving Titania for photo-catalytic degradation, carbon nano-particles, nano-crystalline MgO and ZnO as adsorbants, quantum dots (TiO2-GQDs), nano-particle-supported materials, activated nano.

Potential of nanotechnology in water treatment

Nanotechnology has the potential to provide a long-term solution of water quality, availability and viability of water resources, such as through the use of advanced filtration materials that make possible greater water reuse, recycling and desalination (Agarwal A. et al. 2010; Rajan C. S. 2011). Nanotechnology is the answer to improve costs, efficiency and propose new functionality products and systems as a promising technology in water and waste water worldwide. Nanotechnologies will create immense environmental benefits in terms of water management and treatment by convalescing filtering, decontamination, desalination, conservation, recycling, sewerage systems and developing sensitive analytics or monitoring systems.

Results and discussion

In India, different stakeholders are continuously making effort to provide the solution of specific/combined contaminations problems. Patents' record highlight the innovation capability of a country and help in dissemination of knowledge. It is helpful in understanding the technology gaps in the undergoing researches. By this study, it is found that CSIR and IIT have significant contributions in the field of nanotechnology applications in water treatment/purification sectors in India, using different nanomaterials such as carbon and carbon-based material, novel titanium dioxide–graphene quantum dots (TiO2-GQDs) hybrid multifunctional material, nanocrystalline MgO and ZnO adsorbent products, activated carbon nanocomposites, etc. to remove lead (Pb), arsenic (As), cadmium (Cd), chromium (Cr), nickel (Ni), tetrachloroethylene (PCE), trichloroethylene (TCE), nitrates, phosphates, sulphides, perchlorate, chlorinated hydrocarbons, trinitrotoluene, halogenated organics, pesticides, organo-arsenicals, organo-mercurials, organic dyes, detergents, inorganic anions or combinations. Besides that, simple rapid sensitive and specific photo-luminance (PL) versatile probe has been developed to detect the pollutants especially fluoride and arsenic in water. It is concluded that patented technologies have a potential to solve the contamination problem. However, emphasis should be given to their proper implementation. The government need to show a confidence in these technologies and should fund these technologies for their mass scale production to make it affordable and accessible to end user through market penetration. Growing attention of government and scientific community in water contamination like important problems is vital to combat with the alarming situation. These technologies will help to deal with the limitations of conventional methods to purify water like infusion of capital, engineering expertise and infrastructure facilities.

References

-Agarwal A., Joshi H (2010) Application of nanotechnology in the remediation of contaminated groundwater: a short review. Recent Res Sci Technol 2(6):51–57 http://sciencefora.org/journals/index.php/rrst/article/viewFile/470/455 Google Scholar.
-Balasubramanian H (2014) Treating India's wastewater: why inaction is no longer an option Retrieved from https://www.theguardian.com/sustainable-business/treating-india-wastewater-inaction-technology-public-health.
- Gehrke I, Geiser A, Somborn-Schulz A (2015) Innovations in nanotechnology for water treatment. Nanotechnol Sci Appl 8:1–17. https://doi-org.ddl.idm.oclc.org/10.2147/NSA.S43773 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4294021/ CrossRef Google Scholar.
-Rajan CS (2011) Nanotechnology in groundwater remediation. International Journal of Environmental Science and Development 2(3):240-45 Retrieved from-http://www.ijesd.org/papers/123-F10082.pdf
- Shekhar, S. (2015) Presentation on Ministry of Water Resources, RD & GR: presented before new Secretary (WR, RD & GR). http://wrmin.nic.in/forms/list.aspx?lid=1262

Synthesis Of Phytonanocomposite Of Zinc Oxide By Ixora Coccinea Linn For Cancer Treatment

Hanin Abdulhadi, Ola Alfayad, Dr. Khadijah Katubi
Princess Noura University, 24 October 2018
Training Poster for Chem423

Abstract

Bioactive peptides from Ixora coccinea Linn flowers have been reported to have anticancer activity against various cancer cells. Zinc oxide nanoparticle is the promising metal nanoparticle for anticancer applications. In the present work, ZnO was synthesized using I. coccinea Linn flower extract. The synthesized ZnO nanoparticle was found as phytonanocomposite of ZnO nanoparticle and bioactive components. The synthesized ZnO phytonanocomposite was confirmed using UV Spectroscopic analysis with maximum wavelength at 357.6 nm The presence of bioactive peptides in the nanophytocomposite was confirmed using FT-IR analysis with strong peaks at 3402 and 1629 cm1. The particle size and surface characteristics of bioactive phytonanocomposite of ZnO was studied using Scanning Electron Microscope. The anticancer activity of zinc oxide nanocomposite of I. coccinea Linn flower extract was found to be efficient on MCF-7 cell line

Introduction

The active components present in this plant are used in the treatment of many human diseases such as leucorrhoea, dysentery [2] cancer [3]. coccinea linn flower contains extracts are used for treatment of amenorrhea, hypertension, whooping cough, ulcers, dysentery, haemoptysis and cancer [4].

The active components present in this plant are used in the treatment of many human diseases such as leucorrhoea, dysentery [2] cancer [3]. coccinea linn flower contains extracts are used for treatment of amenorrhea, hypertension, whooping cough, ulcers, dysentery, haemoptysis and cancer [4].
Phytochemicals in flower extract act as a bioreducing and capping agent in the synthesis of metal nanoparticles. Zinc oxide is an inorganic compound also known a zincite and occurs rarely in nature. It usually appears as a white crystalline powder, which is nearly insoluble in water. Zinc oxide nanoparticles (ZnO) are gaining attention in recent times because of its low toxicity. However they may pose a significant risk to the environmental biota at higher concentration. ZnO nanoparticles have good transparency, high electro mobility, wide band gap, chemical and photo chemical stability. ZnO nanoparticles were reported to have both anti-microbial and anticancerous property. Zinc oxide has better electrostatic property, which helps them to have different charge on its surface in acidic and basic pH. This property can be used for conjugation of therapeutic agents and also to internalize nanoparticles to cancer cells as they have high phospholipids with negative charge on their surface [7,8].

Materials

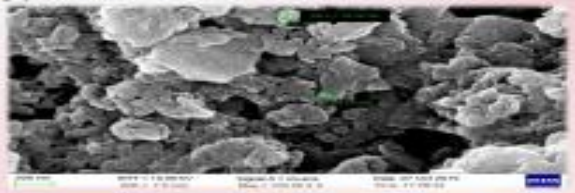
MCF-7 cell line was obtained from Veterinary College, Vepery, Chennai. The cells were maintained in Minimal Essential Mediumsupplemented with 10 % FBS, penicillin (100 U/ml), and streptomycin (100 lg/ml) in a humidified atmosphere of 50 lg/ml CO2 at 37 C. Reagents such as MEM were purchased from Hi-Media Laboratories. Fetal Bovine Serum (FBS) was purchased from Clotron laboratories. Trypsin, methylthiazolyl diphenyl- tetrazolium bromide (MTT) and Dimethyl sulfoxide (DMSO) were purchased from (Sisco research laboratory chemicals, Mumbai).

Characterization of Synthesized Zinc Oxide Phytonanocomposite

The morphology, shape and size of the synthesized ZnO nanoparticles were analysed by Scanning Electron Microscope (SEM). The crystalline nature of the phytonanocomposite was studied by X-ray Diffraction (XRD).

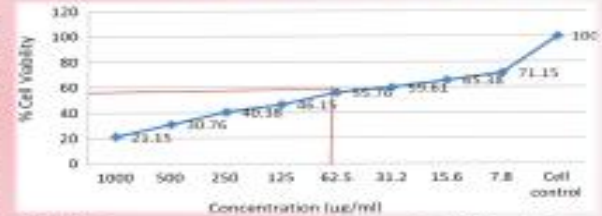
Results and Discussion

Structural Analysis of Synthesized ZnO Phytonanocomposite
The morphological structure, shape and size of the synthesized ZnO phytonanocomposite was analysed by SEM. The SEM result in Fig.(1) confirms the spherical shape of the synthesized ZnO phytonanocomposite. The average size of the phytonanocomposite was found as 69.95 nm. Phytonanocomposite was found to be spherically compact with certain aggregates. The porous and spongy like nature of phytonanocomposite aggregate was confirmed from SEM image. The formation of spongy aggregates might be due to the presence of active phytochemicals from I. coccinea flower extract.



Anti-Cancerous Activity of the Synthesized ZnO Phytonanocomposite

Anti-cancerous activity of synthesized ZnO phytonanocomposite was studied by treating MCF-7 cancer cells with various concentration of ZnO phytonanocomposite ranging from 7.8 to 1000 lg/ml Fig. (3).



Cell viability was measured by the MTT assay. Cell viability without any drug is referenced as positive control with 100 % viability. Cell viability of 71.15 % was observed at 7.8 lg/ml of ZnO phytonanocomposite. The cell viability was decreased with the increase in the concentration of the ZnO phytonanocomposite. The 45 % cytotoxicity (55 % viability) was observed at 62.5 lg/ml concentration It was observed that ZnO phytonanocomposite showed selective cytotoxic effect on cancerous cell but no cytotoxic effect was observed on human immune cells [9]. In-vitro assay of on MCF-7 cell lines confirmed that the synthesized ZnO phytonanocomposite can be used as an effective anti-cancer drug.

Conclusions

The ZnO phytonanocomposite was synthesized by using flower extract of I. coccinea Linn. The phytochemicals present in the flower extract deposited on ZnO nanoparticles and form ZnO phytonanocomposite. The absorbance peak at 357.6 nm in UV–visible spectrophotometer analysis confirmed the presence of ZnO nanoparticles. The spherical shape of ZnO phytonanocomposites was confirmed from SEM analysis. The decrease in cell viability of MCF-7 cell line exhibited the anti-cancerous property of ZnO phytonanocomposite. Thus the ZnO phytonanocomposite can be used as potential anti-cancer agent.

References

[1] R. Sinclair, R. Li, S. Madsen, H. Dai, Ultramicroscopy 134, 167–174 (2013)
[2] A. Upadhyay, P. Chattopadhyay, D. Goyary, P. Mitra Mazumder, V. Veer, ISRN Pharmacol 752824 (2014)
[3] A.R. Kharat, V.V. Namblar, Y.S. Tarkasband, R.R. Pujari, Int. J. Res. Pharm. Chem. 3, 626–635 (2013)
[4] C.P. Khare, Indian Medicinal Plants: an Illustrated Dictionary, Springer (India) Pvt. Ltd., New Delhi (2007)
[5] L.Y. Latha, D. Ibrahim, Asian Pac. J. Trop. Biomed. 2, 149–151 (2012)
[6] M. Yasmeen, S. Prabhu, Ayurveda Integr. Med. 1, 287–291 (2010)
[7] S.W. Ryter, H.P. Kim, A. Hoetzel, J.W. Park, K. Nakahira, X. Wang, A.M. Choi, Antioxid. Redox Signal. 9, 49–89 (2007)
[8] Y. Zhang, W. Chen, S.P. Wang, Y.F. Liu, C. Pope, J. Biomed. Nanotechnol. 4, 432–438 (2008)
[9] K.M. Reddy, K. Feris, J. Bell, G. Wingett, C. Hanley, A. Punnoos, Appl. Phys. Lett. 90, 213902 (2007)

BY DR KHADIJAH KATU

Mesoporous silica nanoparticles (MSNs)-based organic/inorganic hybrid nanocarriers loading 5-Fluorouracil for the treatment of colon cancer with improved anticancer efficacy

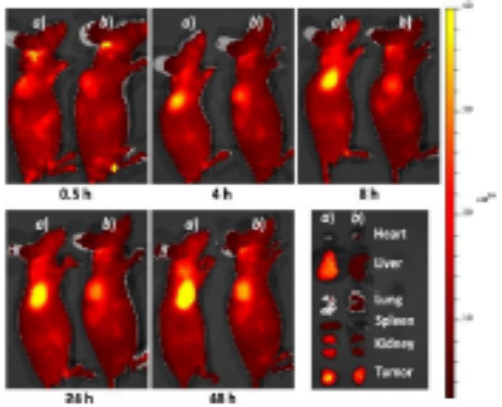
Training Academic Poster CHEM 422 *7-10-2018*
Shamma AlSharfan – Nawwar AlEnzi

ABSTRACT :

Novel methods to improve the anticancer performance of 5-fluorouracil (5-FU) is quite necessary for clinical medicines. In the present work, we fabricated a novel type of mesoporous silica nanoparticles (MSNs)-based inorganic/organic hybrid nanoparticles covalently attached with poly(oligo(ethylene glycol) monomethyl ether methacrylate) (POEGMA) for improved stabilization and targeting peptide (RGD) for targeted delivery with the aim of improving the anticancer performance of 5-FU.

Introduction :

Effective colon cancer treatment has always been a formidable challenge not only due to its high incidence rate but also due to its high mortality rate [1].Colon cancer can be caused by various factors including chronic inflammation, colonic adenomas, unhealthy diet habit, and exposure to carcinogens [2]. In addition to chemotherapy plays an important role in reducing the damage caused by colon cancer and increasing the survival rate of colon cancer patients [3].5-Fluorouracil (5-FU) is one of the most frequently used drugs in the combat with colon cancer owing to its low price and effective anticancer activity [4]. When internalized into tumor cells 5-FU will be converted into fluorodeoxyuridine monophosphate which can mis-incorporate into DNA or RNA chains and ultimately lead to cell apoptosis [5]. However, the clinical potentials of 5-FU are heavily restricted by its severe systemic side effects (such as mucositis and diarrhea) and low therapeutic response rate of cancer tissues . Thus, reducing the side effects by potentiate the anticancer activity of 5-FU or improving the accumulation of 5-FU in targeted regions seems applicable. Because lower 5-FU dosage will be employed in the clinical practice and side effects will be alleviated accordingly. Blood analysis and survival analysis of mice treated with 5-FU loaded nanoparticles was performed to examine their side effects.



METHODOLOGY :

- *Preparation of drug-loaded nanoparticles :*

MSN-P(OEGMA-co-RGD) (10 mg) was mixed with 5-FU solution in PBS (20 mL, 0.5 mg/mL) by ultrasound treatment, followed by stirring for 24 h at room temperature.

- *Establishment of tumor model :*

Subcutaneous tumors were established in nude mice (BALB/c, male, 4–6 weeks old) by injecting cells into their left armpits. All experiments were carried out according to the Guidelines of the Laboratory Protocol of Animal. Tumor sizes were measured using a caliper.

- *Biodistribution of nanoparticles :*

Fluorescent dye Cy5-loaded nanoparticles, Cy5@MSN and Cy5@MSN-RGD, were employed to explore their tumor targeting performance in colon cancer xenograft tumors. MSN and Cy5 were injected through the vena caudalis (tail vein) into the tumor-bearing xenografted mice. Fluorescence imaging of the tumor-bearing mice was conducted at varying time intervals by using a small animal in vivo fluorescence imaging system .The mice were sacrificed 48 later and the tumor and organs (including heart, liver, spleen, lung, and kidney) were collected for ex vivo distribution examination with an in vivo imaging system.

RESULTS :

Synthesis and characterization of MSN-based nanoparticles
Briefly, MSN was synthesized by the by the base-catalyzed hydrolysis of tetraethyl orthosilicate using N-cetyltrimethylammonium bromide as the template. The obtained MSN was modified with 3-aminopropyltriethoxysilane, leading to the formation of amine-functionalized MSN, MSN-NH2. MSN-Br was then prepared by the reaction of amino groups of MSN-NH2 with 2-bromo-2- methylpropionyl bromide.

Conclusions :

In summary, a novel type of organic/inorganic hybrid nanoparticles, MSN-P(OEGMA-co- RGD), covalently attached with stabilizing polymers POEGMA and targeting peptide RGD were developed and used for delivering 5-FU to treat colon cancer. It was demonstrated that 5-FU can be effectively loaded into the meso-pores of MSN-based nanoparticles. 5-FU@MSN can effectively improve cell death in vitro and reduce tumor increase in vivo than free 5-FU.

References :

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tion.

Enhanced levofloxacin removal from water using zirconium (IV) loaded corn bracts

Atheer Suliman al-homedan , Shaden al-hwaishel
Dr. Khadijah katubi
Princess Nora bint AbdulRahman University
Training poser Chem 422

Introduction

Adsorption is an economic, environmental-friendly, and simple method for wastewater treatment. The adsorbent plays a key role in adsorption, and much research has focused on finding or making cheap, effective and nontoxic adsorbents. Agricultural wastes, mainly composed of lignocellulosic materials that contain many functional groups, are suitable adsorbents[1]. The use of agricultural waste as an adsorbent can not only save money due to the reduced need for traditional agricultural waste disposal, but also promote recycling and reuse. Previous studies have investigated different types of agricultural waste for adsorbents, including fruit wastes [2,3,4,5,6,7,8,9] and other wastes. Corn is one of most common crops in the world, and hundreds of millions of tons are produced every year. Corn bracts (CBs), as corn byproducts, are very abundant and easy to obtain. In this work, CBs were chosen as the adsorbent for LEV removal. In order to enhance the adsorption capacity, zirconium(IV) was used to modify the CBs due to its wide distribution in nature, nontoxicity, good resistance to alkali/acids/oxidants/reductants, high thermostability and low solubility [10]. To our knowledge, current research has focused on removing inorganic anions, such as arsenate, arsenite, and phosphate, with loaded zirconium[11],but no work has been performed to remove antibiotics using the Zr-modified agricultural wastes. Zr-modified CBs are attractive adsorbents because of the following advantages: First, in comparison with other agricultural wastes, such as fruit wastes or bean hulls, they are much more abundant, and can be attained at a lower or no cost. In addition, they are easy to collect and store. Second, compared with some other metal elements, zirconium is nontoxic and stable. The leaching Zr ion concentrations during the adsorption and desorption processes were below 0.03 mg/L. Third, the adsorbent preparation procedure is simple and saves energy because it does not require a high temperature for pyrolysis. Additionally, the use of Zr-modified CBs is a novel approach for both antibiotic removal and CB reuse. The objectives of this study were (1) to prepare an economic,eco-friendly adsorbent (Zr-modified CBs) for LEV removal;(2) to determine the optimal conditions for LEVadsorption; and (3) to investigate the mechanism of LEVadsorption onto Zr-modified CBs.

Methods

Sorbents preparation

There were two main processes for the sorbents preparation.The first was base treatment. Base treatment broke up the ester bonds and generated more hydroxyl groups, which played an important role in the next step [12]. Moreover, it could bleach out some interfering materials, such as chlorophyll pigments and low molecular weight compounds [13], reducing secondary pollution during the adsorption periods. The second step was Zr(IV) solution treatment. Zr was deposited onto the biomass by chemical reactions with the hydroxyl groups and carboxylic groups [14].

Adsorption and desorption experiments

Adsorption performance comparisons 0.5 g of CBs, NaOH-treated CBs and Zr-modified CBs were reacted with 50 ml LEV (100 mg/L) solutions for 24 h at 240 rpm and 303 K, respectively. The initial pH was 7.Afterwards, they were filtered for LEV determination.

Effect of pH

The LEVadsorption as a function of pH was conducted with 100 mg/L LEV. The pH was adjusted by HCl and NaOH solutions. Zr-modified CBs (0.1 g) were added to 50 Ml LEV solution in a shaking water bath for 24 h at 240 rpm and 303 K. The pH values were measured after equilibrium.

Kinetic experiments

The kinetic experiment was performed at an initial pH of 7. 100 mg/L or 500 mg/L LEV solution (50 mL) was reacted with 0.1 g Zr-modified CBs for 24 h or 48 h at 240 rpm and 303 K. Samples were taken at different time intervals.

Results

Adsorption performance comparisons LEV adsorption capacity by untreated CBs, NaOH-treated CBs and Zr-molified CBs were compared, as shown in Fig. 2. The untreated CBs could adsorb a small amount of LEV. For the NaOH-treated CBs, the adsorption amount improved only a little. In contrast, the LEV adsorption capacity onto Zr-modified CBs was much higher than the others, suggesting that Zr played an important role in LEVadsorption.

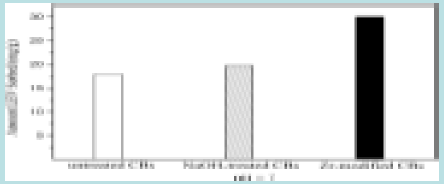

Fig. 2 Adsorption of LEVonto untreated CBs, NaOH-treated CBs and Zr-modified CBs

Effect of pH The effect of initial pH on LEVadsorption by the Zr-modified CBs was shown in Fig. 3a. When the initial pH values were 3, 5, 7, 9 and 11, the corresponding equilibrium pH values were 3.0, 4.6, 7.5, 8.4 and 10.5, respectively. The maximum adsorption occurred at about pH 7. When the pH was between 3 and 7, the amount of LEV adsorbed increased with the increasing pH value. However, the adsorption decreased sharply when the pH was greater than 7. This phenomenon was similar to that of previous researches using other adsorbents [15,16].

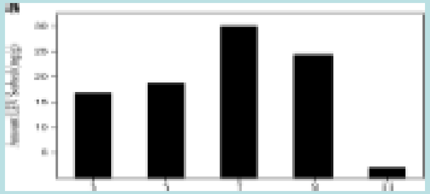

Fig. 3 Adsorption of LEVonto Zr-modified CBs as a function of pH (a)

Conclusions

Zr-modified CBs exhibited a relatively strong adsorption capacity. The adsorption experimental data followed the pseudosecond order kinetic model and fit well with the Freundlich model. FTIR and XPS studies indicated that Zr was successfully loaded on the CBs. LEV was adsorbed on the Zrmodified CBs mainly due to two mechanisms: the interaction of its ketone and carboxyl groups with Zr atoms to form a complex and the π-π interaction. Zr-modified CBs are an economic, effective and nontoxic adsorbent and should be considered as a new material for removing antibiotics from wastewater.

References

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The efficiency of Eichhornia crassipes in the removal of organic and inorganic pollutants from wastewater

Dr: Khadija katubi. students: Bashayer alsayahi and Hanan almutairi

Princess nourah university.

date:26 oct 2018 (training worker poster chem422)

Abstract Water is a basic necessity of life ,but due to over extraction and heavy input of nutrients from domestic and industrial sources, the contamination level of water bodies increase.

Introduction

Water is an abject necessity for any kind of life on the earth. Other than drinking, bathing, and domestic uses, water is used in agricultural and industrial sectors.

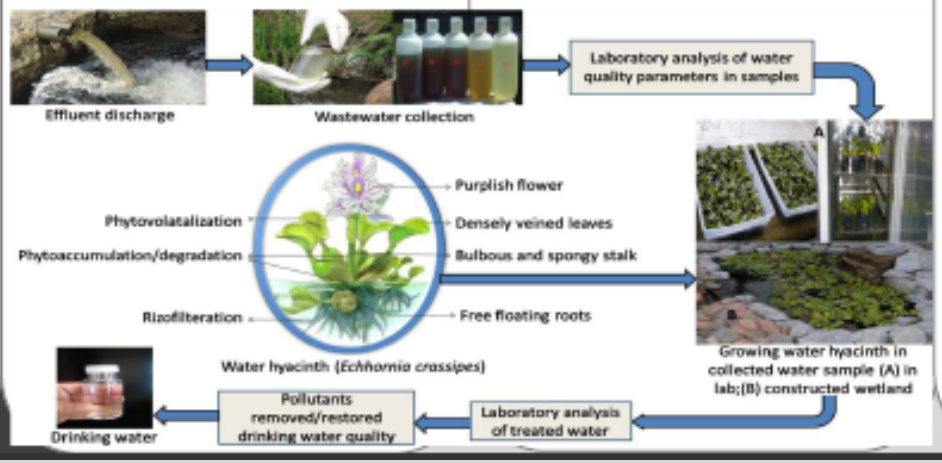
A large amount of wastewater is generated after domestic and industrial uses, which is discharged either directly or after partial treatment, to the nearby water bodies that adds a large number of toxic contaminants to the reservoir (Mishra et al. 2015).

Methods

fig. 1 Stepwise procedure of wastewater treatment using water hyacinth

Results

First, the mechanical control method (Harley et al. 1997). this control method is not always feasible, as it is much expensive. Second is the chemical control meth- od, But this method might damage the biodiversity of other plant commu- nities and imbalance the ecological health of the site (Ndimele and Ndimele 2013).



Third, the biological control method, which is a classical technique which involves the use of insects, bacteria, and fungi to remove water hyacinth (Charudattan et al. 1986.

Conclusion

the plant has been proved to be a good candidate for the removal of contaminants like heavy metals ions, dyes, radio nuclides, and other organic and inorganic contaminants from water at laboratory.

In conclusion, water hyacinth has high removal efficiency for heavy metals ions . Research should be conducted to enhance its capability to sustain and remove toxic contaminants/nutrients from indus- trial and domestic wastewater.

References

Mishra S, Kumar A, Shukla P (2015) Study of water quality in Hindon River using pollution index and environmetrics. India Desal Water Treat. doi:10.1080/19443994.2015.1098570

Harley KLS, Julien MH, Wright AD (1997) Water hyacinth: a tropical worldwide problem and methods for its control, proceedings of the first meeting of the international water hyacinth consortium. World Bank

Ndimele PE, Ndimele CC (2013) Comparative effects of biostimulation and phytoremediation on crude oil degradation and absorption by water hyacinth (Eichhornia crassipes [Mart.] Solms). Inter J Enviro Stud 70 (2): 241-258

Charudattan R (1986) Integrated control of water hyacinth (Eichhornia crassipes) with pathogens insects and herbicides. Weed Sci 34:26–30

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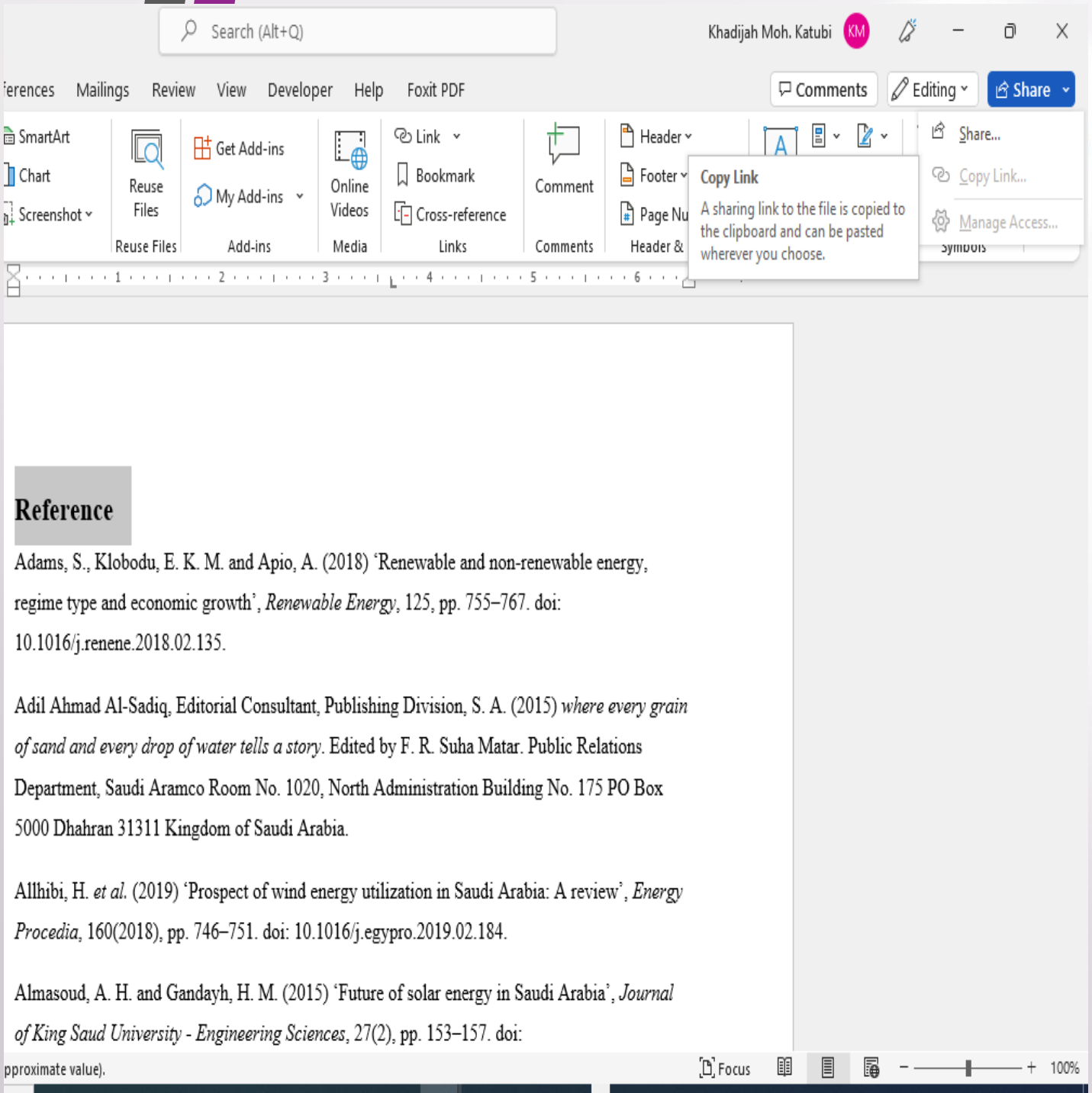

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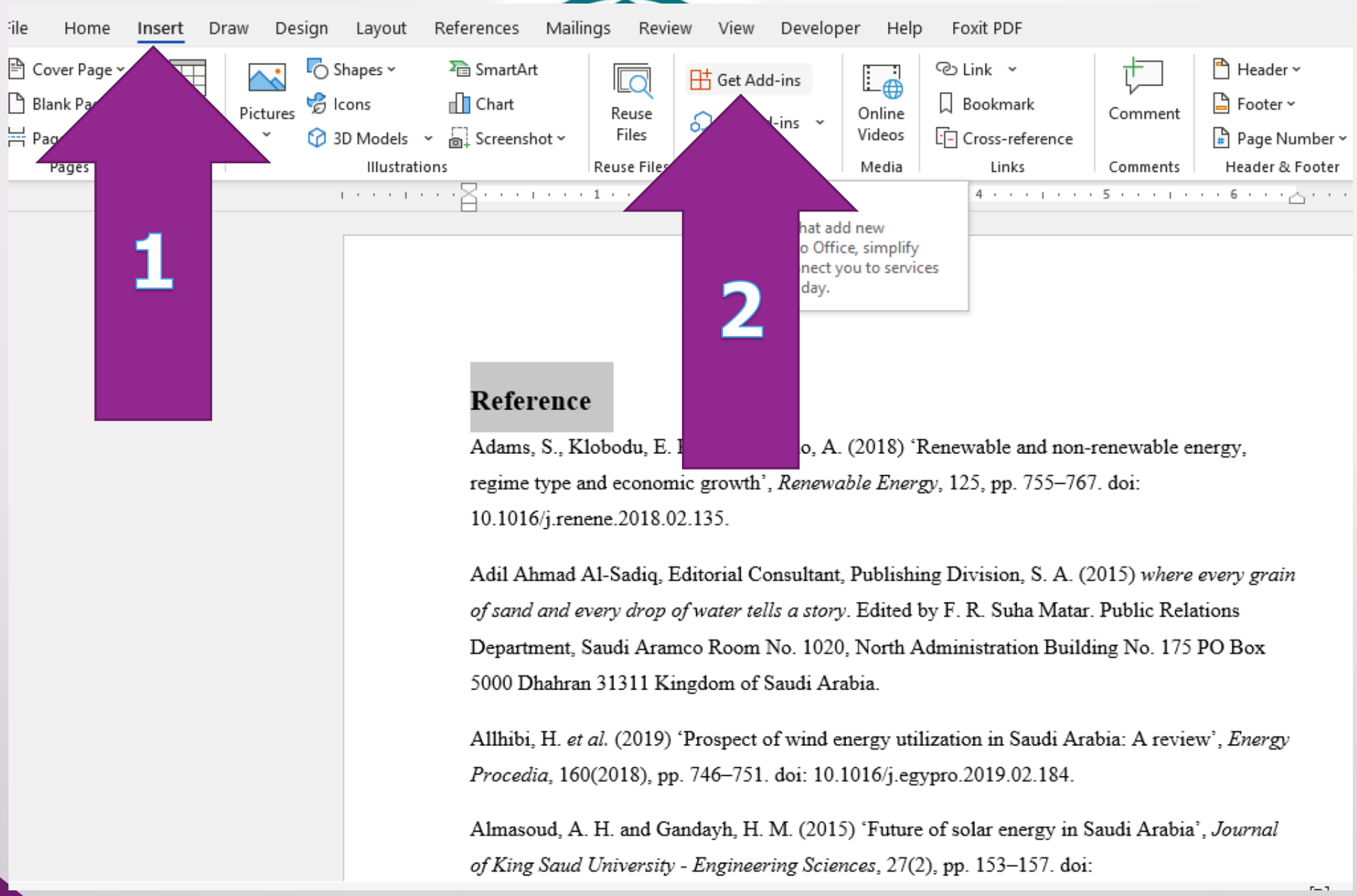
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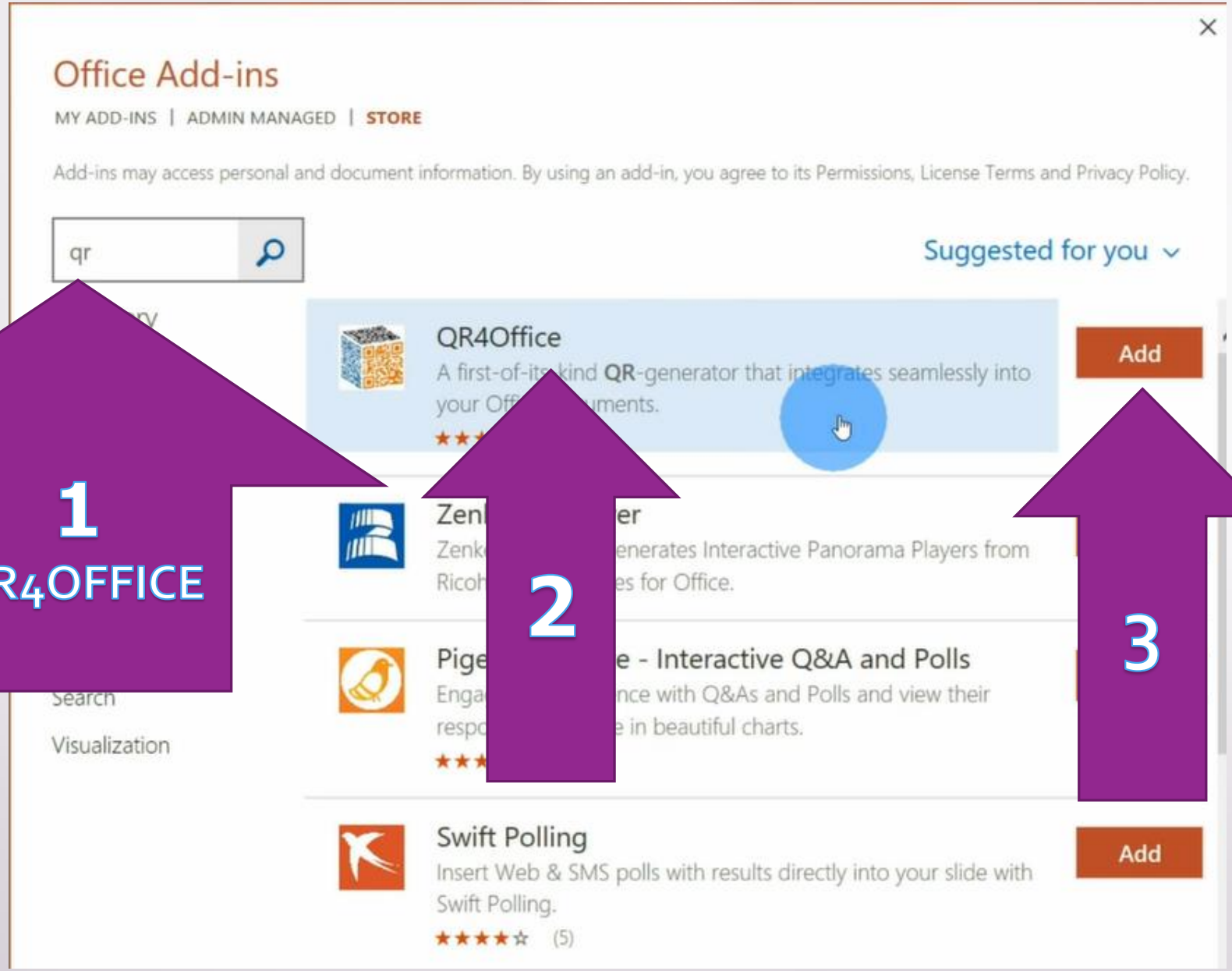
Adams, S., Klobodu, E. K. M., Apio, A. (2018) 'Renewable and non-renewable energy, regime type and economic growth', Renewable Energy, 125, pp. 755–767. doi: 10.1016/j.renene.2018.02.135.
Adil Ahmad Al-Sadiq, Editorial Consultant, Publishing Division, S. A. (2015) where every grain of sand and every drop of water tells a story. Edited by F. R. Suha Matar. Public Relations Department, Saudi Aramco Room No. 1020, North Administration Building No. 175 PO Box 5000 Dhahran 31311 Kingdom of Saudi Arabia.
Allhibi, H. et al. (2019) 'Prospect of wind energy utilization in Saudi Arabia: A review', Energy Procedia, 160(2018), pp. 746–751. doi: 10.1016/j.egypro.2019.02.184.
Almasoud, A. H. and Gandayh, H. M. (2015) 'Future of solar energy in Saudi Arabia', Journal of King Saud University - Engineering Sciences, 27(2), pp. 153–157. doi: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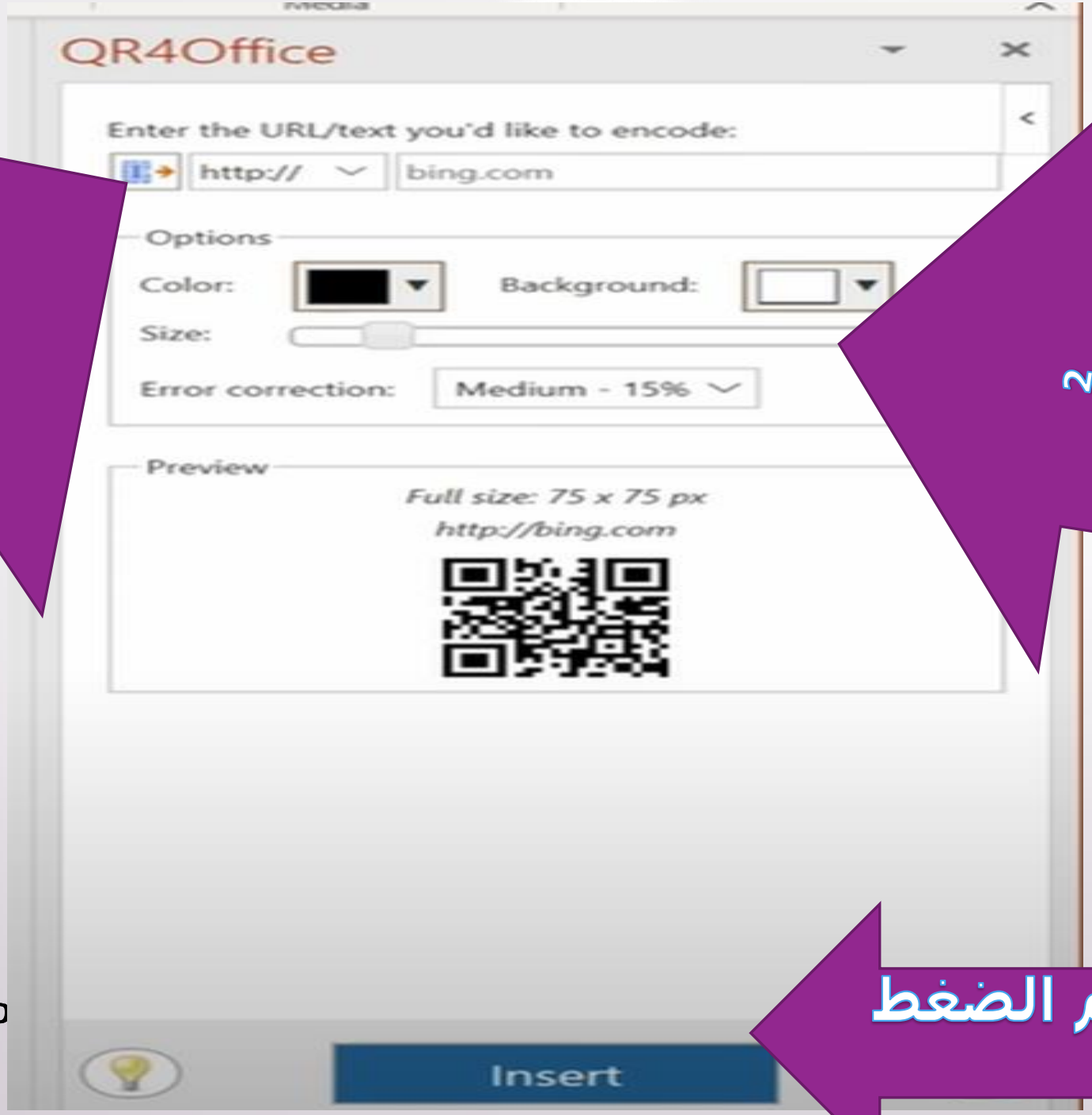

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