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The importance of Algerian illite-montmorillonite in the retention of 2-[4-(2-methyl)propyl]phenylpropanoic acid

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INTRODUCTION

The various environmental compartments receive several pollutants from continuously originatingfrom different human activities[37]. Medicines are utilised in large quantities worldwide, and consumption increases every year[38].After administration, drugs are partly excreted via faeces and urine, reaching the treatment plants via the wastewater collection network[39]. They can pass through decontamination treatments and end up in the environment[40]. Other sources of medicines for the environment include agriculture, aquaculture, and the discharge of unused medicines into the wastewater network [1,2].Residues of pharmaceutical compounds constitute a significant class of emerging contaminants (ECs) in the environment[41]. After ingestion by humans and animals, a large number of intact pharmaceuticals and their metabolites are released into wastewater[42].

Résultats :

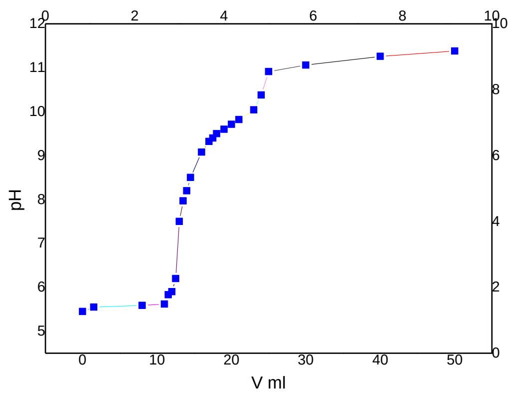

Fig 2. Variation of pH depending on the volume poured

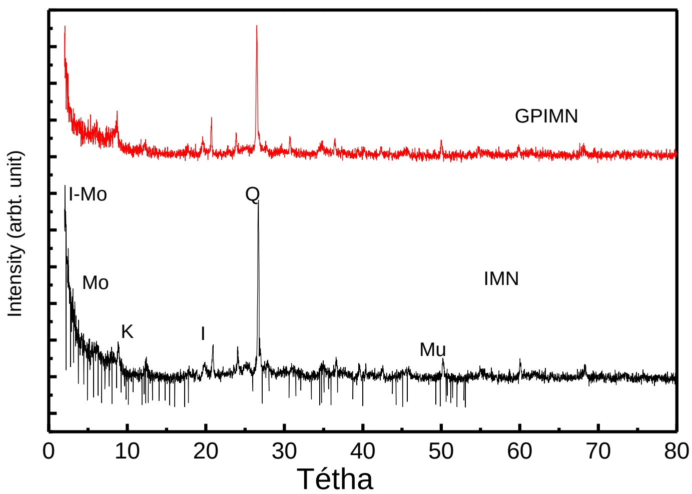

Fig 3 X-ray diffractogram of IMN and GPIMN clay powder

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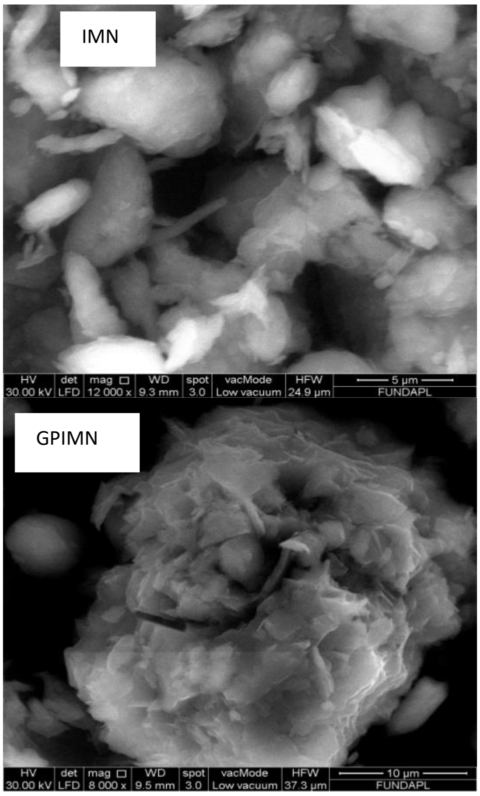

Fig 5 a .SEM images of clay sample

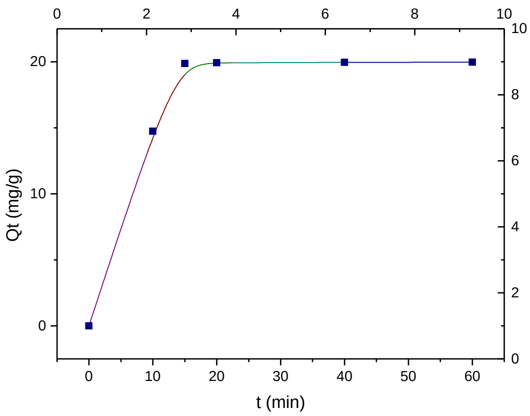

Fig 6. Adsorption kinetics of IBP on IMN clay

(m=0.1g; C0=40mg/l, T=20°c, PH=7.2)

$$q_e = (C_0 - C_e)\frac{V}{m} \quad (2)$$

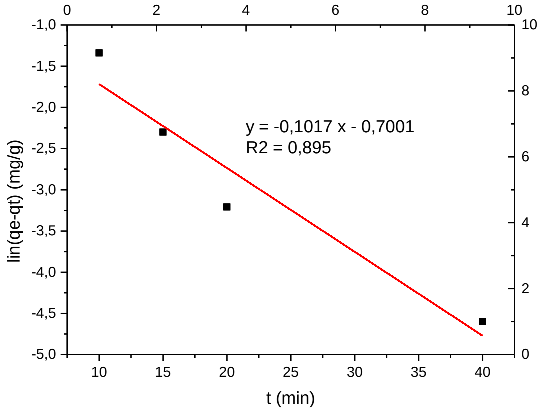

Figure 7. Pseudo first-order model of IBP adsorption on IMN clay

$$\ln(q_e - q_t) = \ln q_e - K_1 t \quad (3)$$

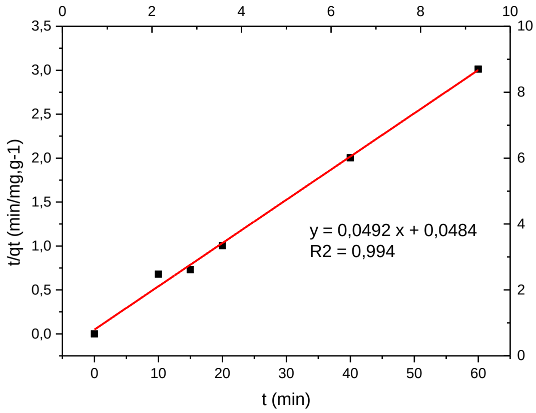

Figure 8. Pseudo-second-order modeling of IBP adsorption on IMN clay

$$\frac{t}{q_t} = \frac{1}{K_2 q_e^2} + \frac{1}{q_e} t \quad (4)$$

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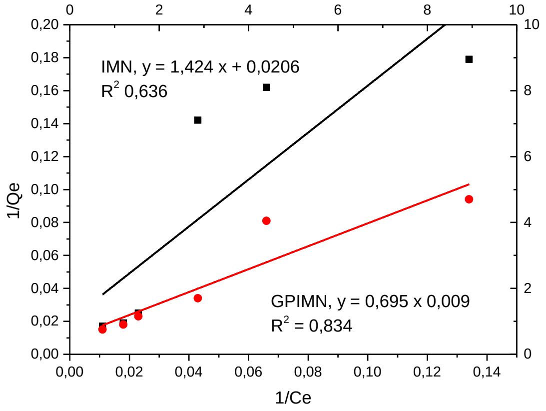

Figure 11,a. Linear regression of the Langmuir modelof the adsorption of IBP on (IMN and GPIMN)clay.

$$\frac{1}{q_e} = \frac{1}{q_{max}K_L}\left(\frac{1}{C_e}\right) + \frac{1}{q_{max}} \quad (5)$$

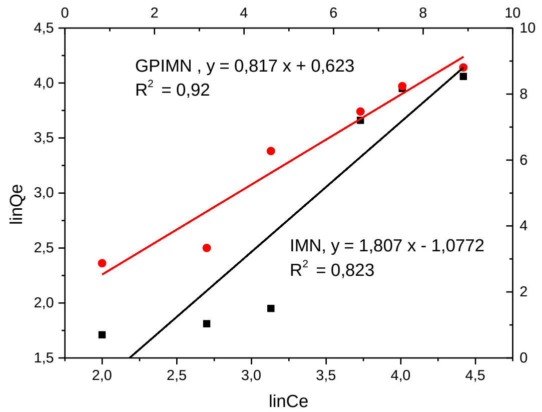

Figure 12,. Linear regression of the Freundlich model of the adsorption of IBP on (IMN and GPIMN) clay.

$$\ln q_e = \ln K_F + \frac{1}{n}\ln C_e \quad (8)$$

GENERAL CONCLUSION

Pharmaceutical-polluted water is the focus of our research, which tries to clean it up for environmental sustainability. This study examined the adsorption capability and efficacy of natural and synthetic clay for ibuprofen-containing wastewater treatment. Thus, the experimental portion included two parts: the first characterised the research material. The findings and conclusions of ibuprofen adsorption experiments on natural and synthetic clay are in the second part. Thus, adsorption kinetics showed that ibuprofen adsorption on raw Tiaret clay is quick, contact time of 38 min, and maximum efficiency Qt = 20.66 mg/g after 40 min

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