Use of ionic liquid pretreated and fermented sugarcane bagasse as an adsorbent for congo red removal

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Figure S1. Langmuir isotherm plots for (a) untreated sugarcane bagasse, (b) alkali and ionic liquid pretreated sugarcane bagasse, and (c) fermented sugarcane bagasse.

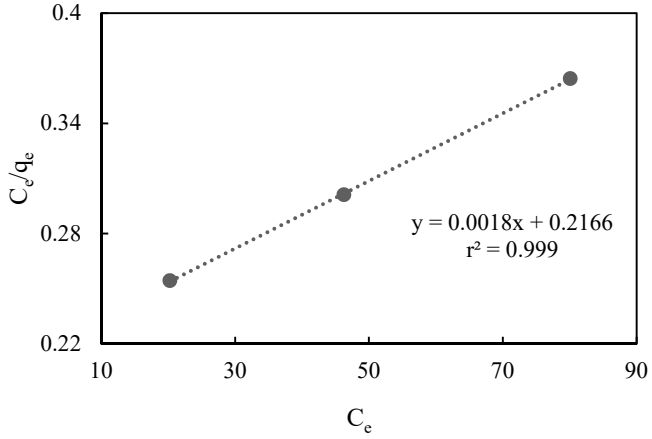
Figure S2. Freundlich isotherm plots for (a) untreated sugarcane bagasse, (b) alkali and ionic liquid pretreated sugarcane bagasse, and (c) fermented sugarcane bagasse.

Figure S3. Adsorption kinetics for untreated sugarcane bagasse (a) pseudo-first order model, and (b) pseudo-second order model.

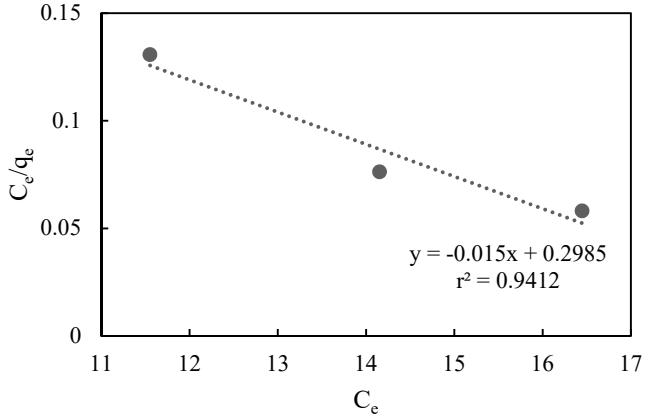
Figure S4. Adsorption kinetics for alkali and ionic liquid pretreated sugarcane bagasse (a) pseudo-first order model, and (b) pseudo-second order model.

Figure S5. Adsorption kinetics for fermented sugarcane bagasse (a) pseudo-first order model, and (b) pseudo-second order model.

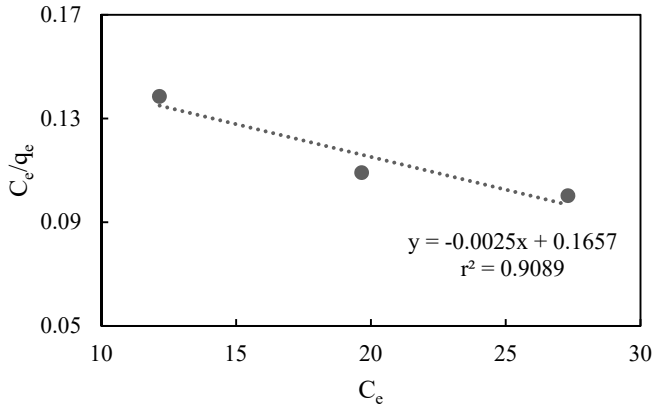
Figure S6. Intra-particle diffusion model for adsorption of congo red on (a) untreated sugarcane bagasse, (b) alkali and ionic liquid pretreated sugarcane bagasse, and (c) fermented sugarcane bagasse.


0.4
0.34
0.28
0.22
10
30
50
70
90
C_e/q_e
C_e
y = 0.0018x + 0.2166
r² = 0.999

(a)

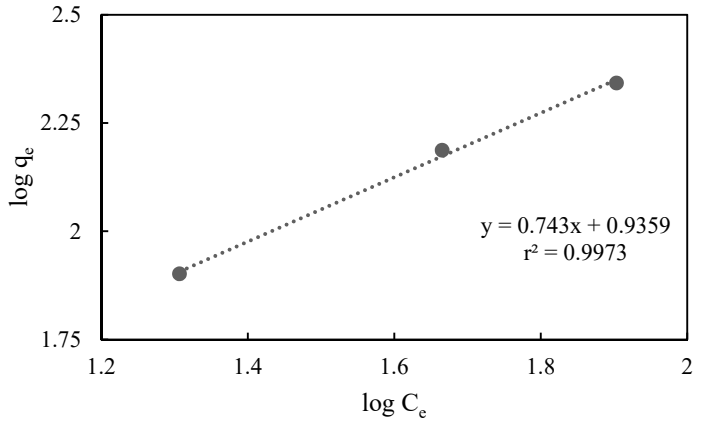

0.15
0.1
0.05
0
11
12
13
14
15
16
17
C_e/q_e
C_e
y = -0.015x + 0.2985
r² = 0.9412

(b)

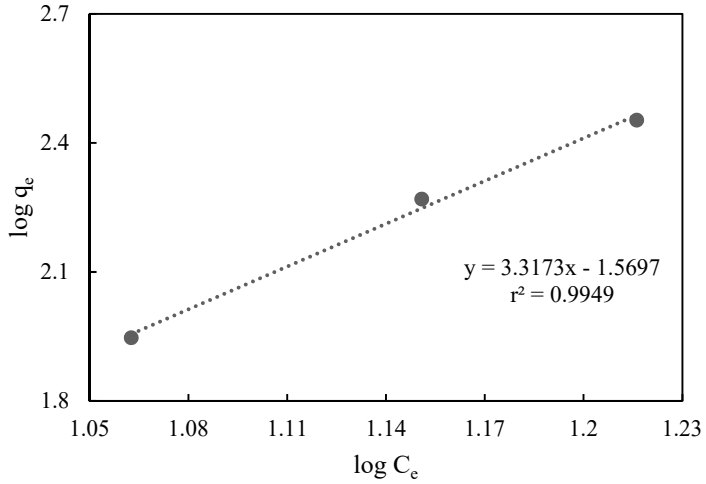


(c)

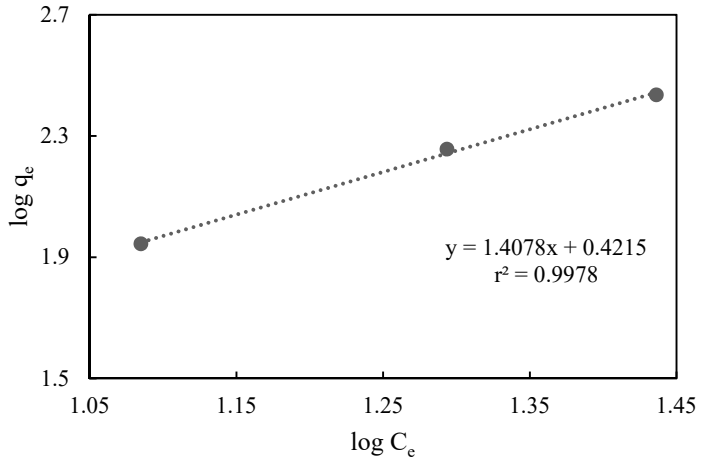
Figure S1.


2.5
2.25
2
1.75
log q_e
y = 0.743x + 0.9359
r^2 = 0.9973
1.2
1.4
1.6
1.8
2
log C_e

(a)

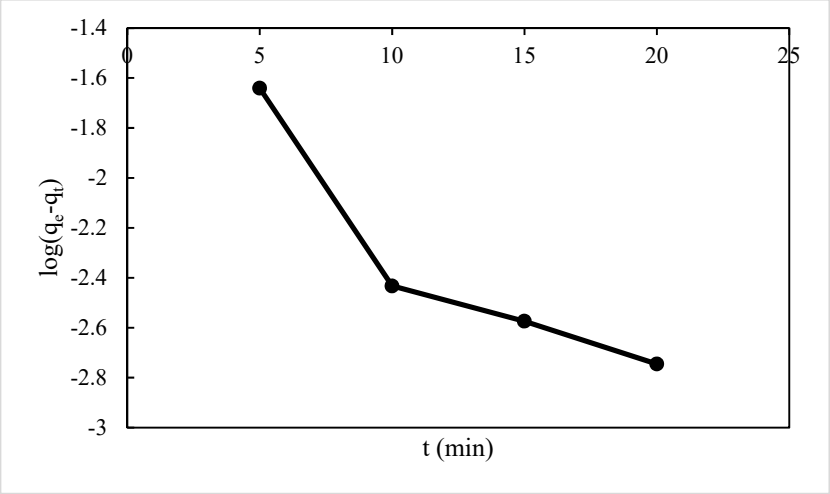

2.7
2.4
2.1
1.8
log q_e
y = 3.3173x - 1.5697
r^2 = 0.9949
1.05
1.08
1.11
1.14
1.17
1.2
1.23
log C_e

(b)

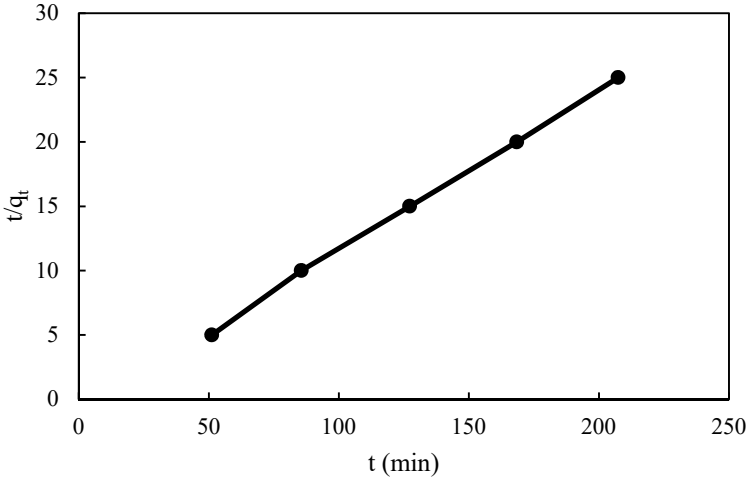

2.7
2.3
1.9
1.5
log q_e
y = 1.4078x + 0.4215
r^2 = 0.9978
1.05
1.15
1.25
1.35
1.45
log C_e

(c)

Figure S2.

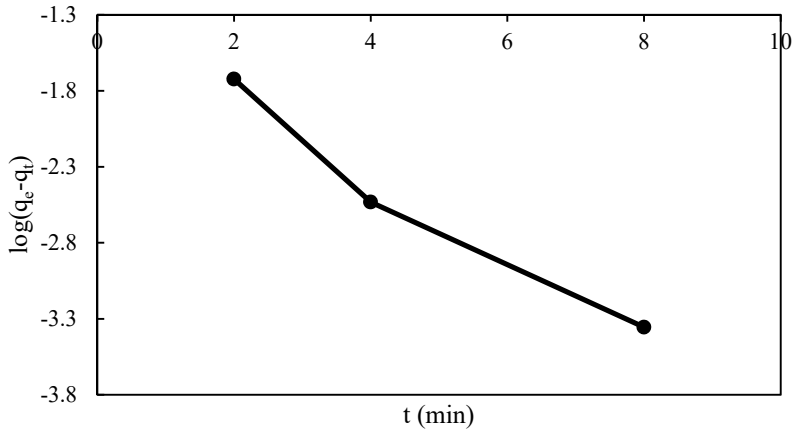

-1.4
-1.6
-1.8
-2
-2.2
-2.4
-2.6
-2.8
-3
0
5
10
15
20
25
log(qe-qt)
t (min)

(a)

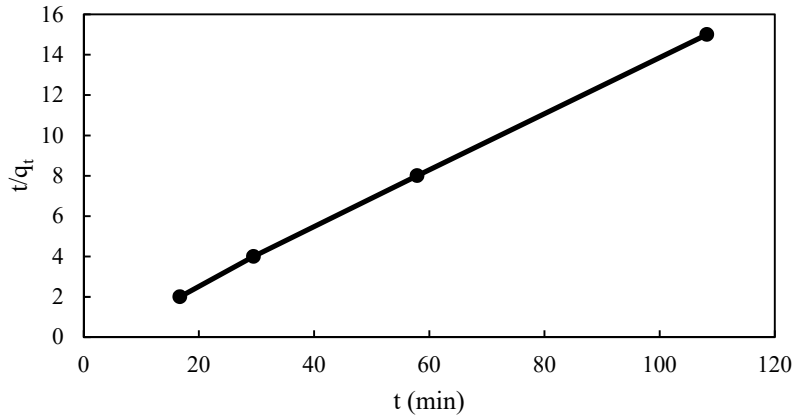

30
25
20
15
10
5
0
0
50
100
150
200
250
t/qt
t (min)

(b)

Figure S3.

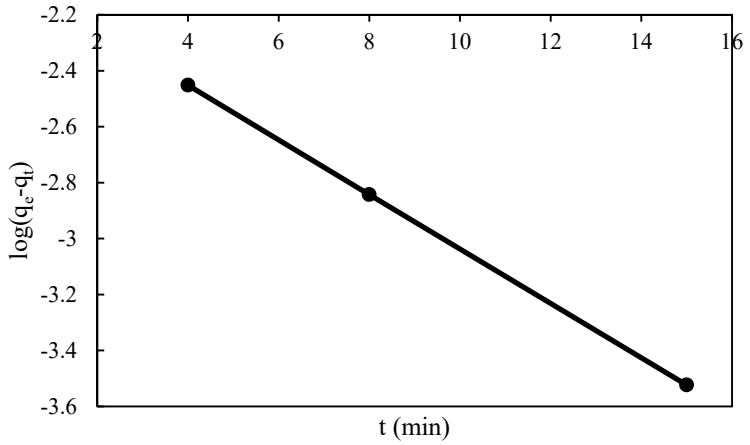

-1.3
-1.8
-2.3
-2.8
-3.3
-3.8
0
2
4
6
8
10
log(qe-qt)
t (min)

(a)

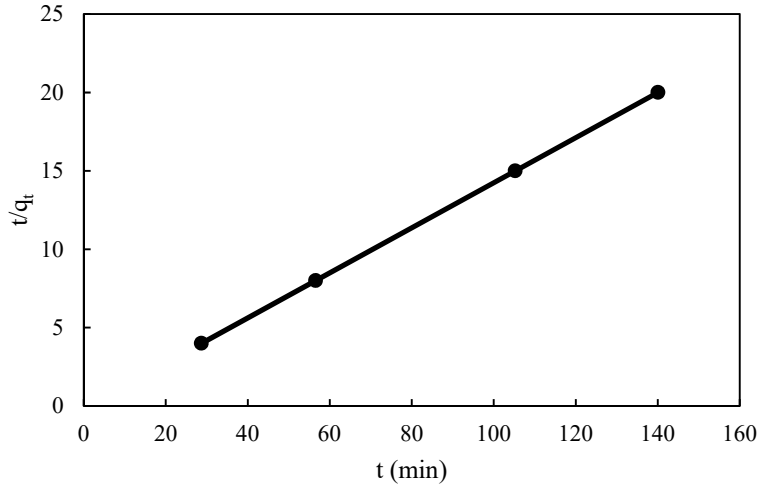

16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
t/qt
t (min)

(b)

Figure S4.

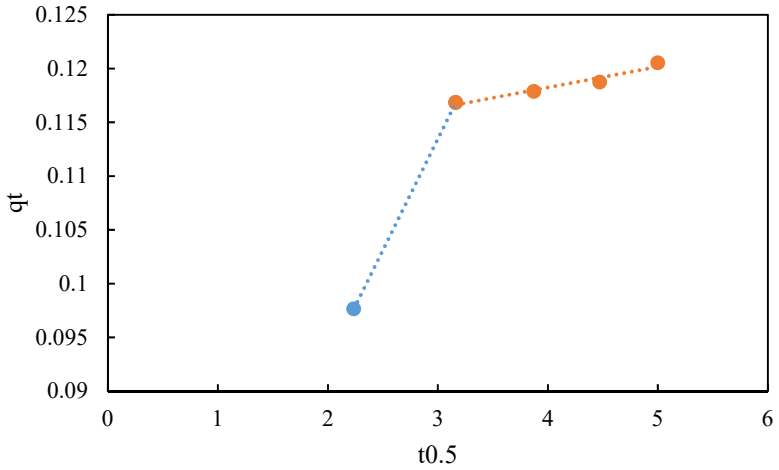

-2.2
-2.4
-2.6
-2.8
-3
-3.2
-3.4
-3.6
2
4
6
8
10
12
14
16
log(qe-qt)
t (min)

(a)

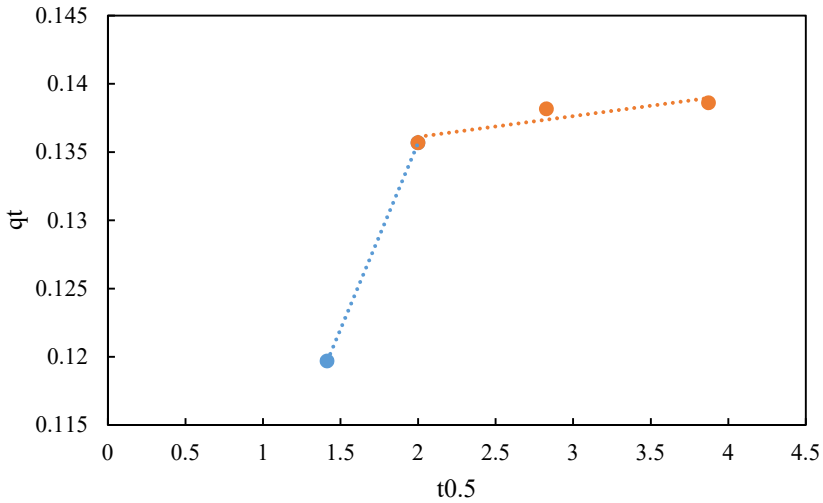

25
20
15
10
5
0
0
20
40
60
80
100
120
140
160
t/qt
t (min)

(b)

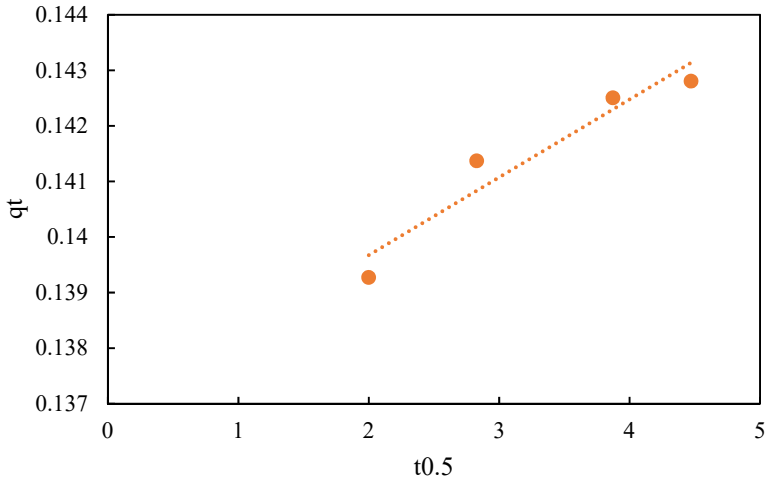
Figure S5.


0.125
0.12
0.115
0.11
0.105
0.1
0.095
0.09
qb
0
1
2
3
4
5
6
t0.5

(a)


0.145
0.14
0.135
0.13
0.125
0.12
0.115
qb
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
t0.5

(b)



(c)

Figure S6.