Figure Captions

Figure 1. Overall removal and enzymatic degradation of 30 TrOCs in MD-EMBR after 60 h of operation (*i.e.,* 2×HRT). Operating conditions for MD-EMBR: The initial TrOC concentration and laccase activity was 20 µg/L and 95-100 $\mu M_{(DMP)}$/min, respectively; temperature of the enzymatic bioreactor and the permeate tank was kept at 30 and 10 ºC; and cross-flow rate of water from enzymatic bioreactor and distillate was 1 L/min (corresponding to cross-flow velocity of 9 cm/s). Data presented as average±standard deviation (n=4).

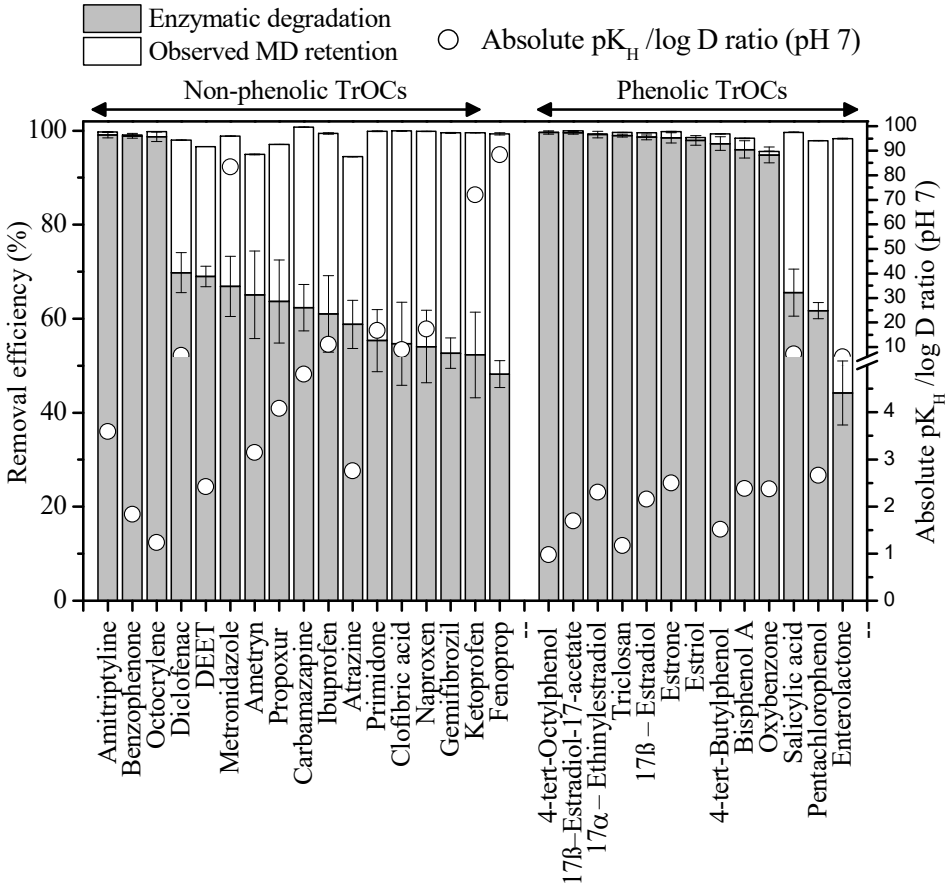
Figure 2. Enzymatic degradation of 30 TrOCs following the addition of two redox-mediators *viz* SA and VA separately at 0.5 mM in MD-EMBR. SA or VA was introduced only at the start of MD-EMBR operation. Data presented as average±standard deviation (n=4). Operating conditions of the MD-EMBR are given in the caption of Figure 1.

Figure 3. Fate of TrOCs during MD-EMBR operation with and without the addition of redox-mediators. Operating conditions of the MD-EMBR are given in the caption of Figure 1.

Figure 4. Effect of individual mediators and their mixture on the degradation of selected non-phenolic TrOCs showing reduced performance when mediator mixture was used. Data presented as average±standard deviation (n=4). Operating conditions of MD-EMBR are given in the caption of Figure 1. Effect of mediator mixture (*i.e.,* SA and VA) on all the tested TrOCs (*i.e.,* phenolic and non-phenolic) is shown in Supplementary Data Figure S3.

Figure 5. Oxidation reduction potential (ORP) and laccase inactivation percentage with and without the addition of redox-mediators. Operating conditions of MD-EMBR are given in the caption of Figure 1. Data presented as average±standard deviation (n=2 for ORP; and n=5 for laccase inactivation). Time course of enzymatic activity during all experiments is given in Supplementary Data.

Figure 6. Contact angle of the membrane before and after using it for EMBR operation. Error bars represent the standard deviation of three repeated measurements.


Enzymatic degradation
Observed MD retention
Absolute pK$_H$ /log D ratio (pH 7)
Non-phenolic TrOCs
Phenolic TrOCs
Removal efficiency (%)
Absolute pK$_H$ /log D ratio (pH 7)
Amitriptyline
Benzophenone
Octocrylene
Diclofenac
DEET
Metronidazole
Ametryn
Propoxur
Carbamazapine
Ibuprofen
Atrazine
Primidone
Clofibric acid
Naproxen
Gemifibrozil
Ketoprofen
Fenoprop
--
4-tert-Octylphenol
17ß–Estradiol-17-acetate
17α – Ethinylestradiol
Triclosan
17ß – Estradiol
Estrone
Estriol
4-tert-Butylphenol
Bisphenol A
Oxybenzone
Salicylic acid
Pentachlorophenol
Enterolactone
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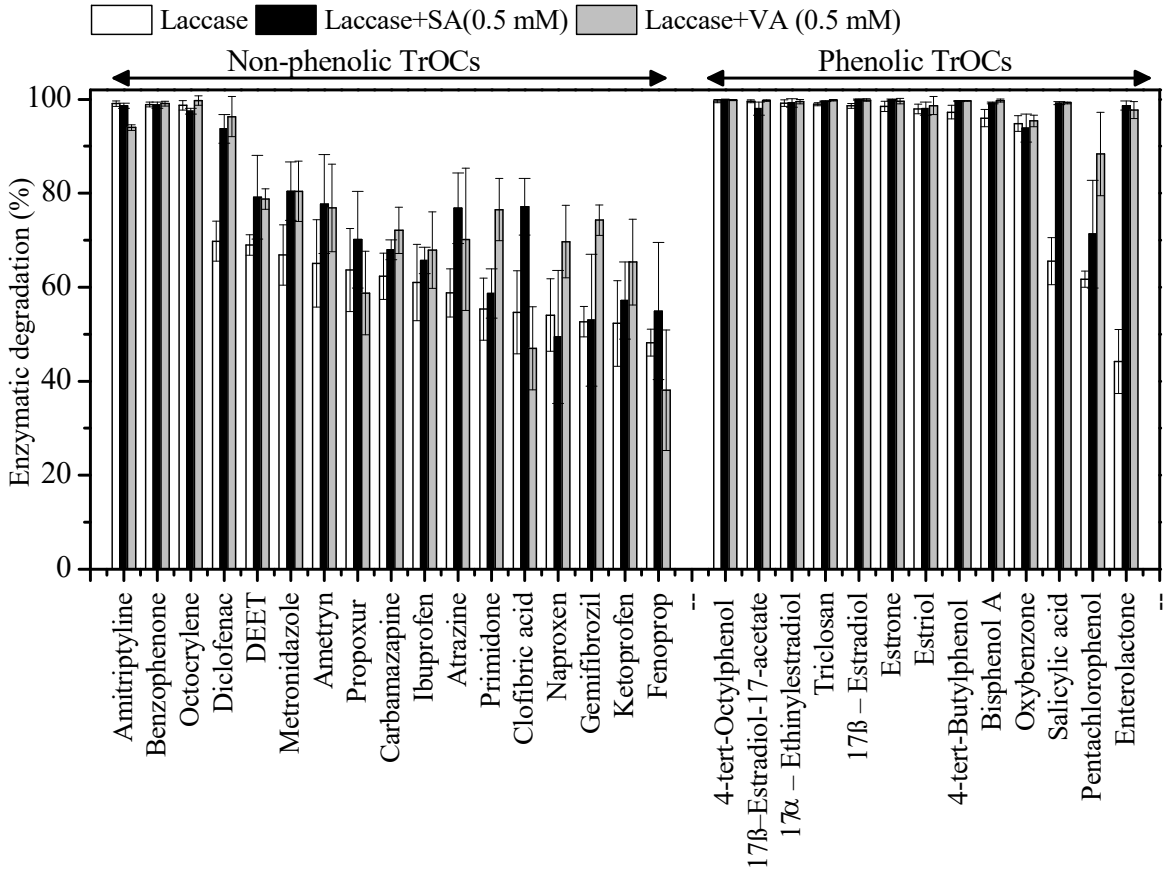
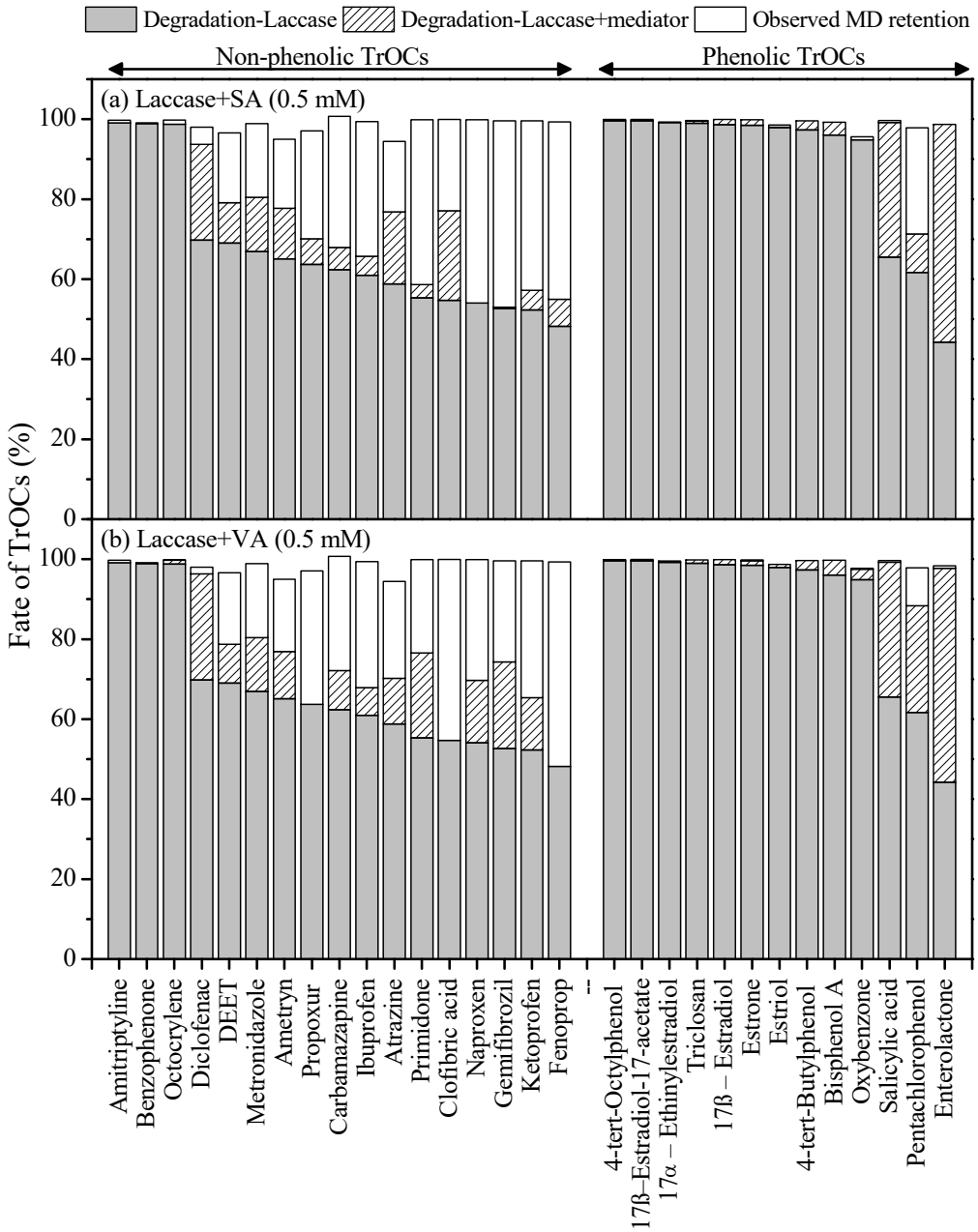
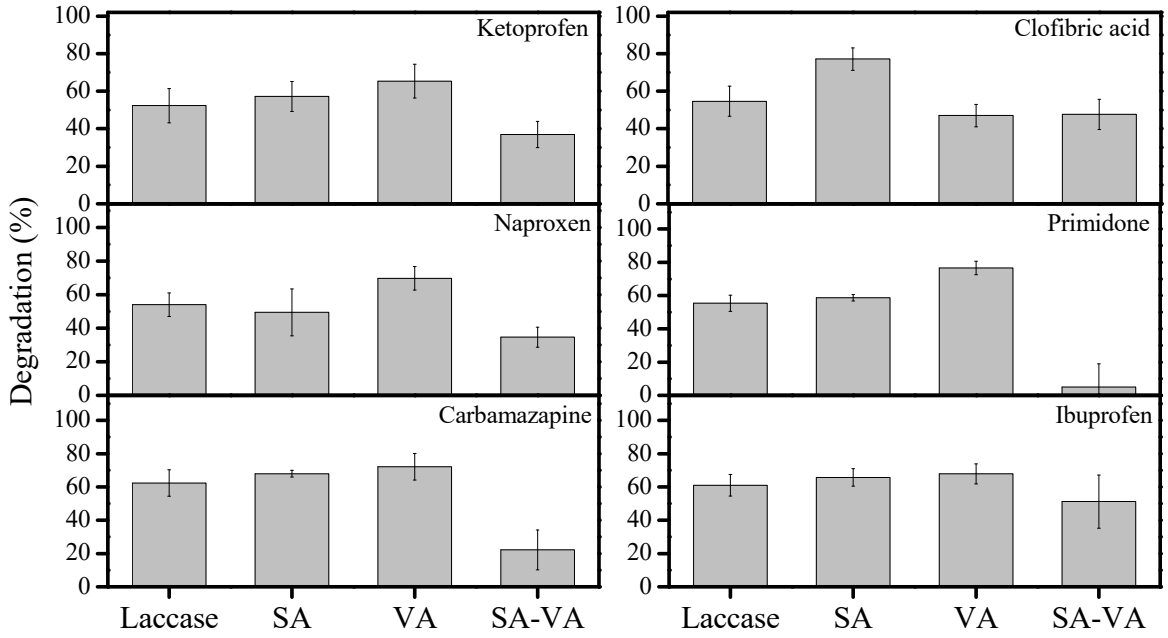
[Figure 1]


Laccase
Laccase+SA(0.5 mM)
Laccase+VA (0.5 mM)
Non-phenolic TrOCs
Phenolic TrOCs
Enzymatic degradation (%)
100
80
60
40
20
0
Amitriptyline
Benzophenone
Octocrylene
Diclofenac
DEET
Metronidazole
Ametryn
Propoxur
Carbamazapine
Ibuprofen
Atrazine
Primidone
Clofibric acid
Naproxen
Gemifibrozil
Ketoprofen
Fenoprop
--
4-tert-Octylphenol
17ß–Estradiol-17-acetate
17α – Ethinylestradiol
Triclosan
17ß – Estradiol
Estrone
Estriol
4-tert-Butylphenol
Bisphenol A
Oxybenzone
Salicylic acid
Pentachlorophenol
Enterolactone
--

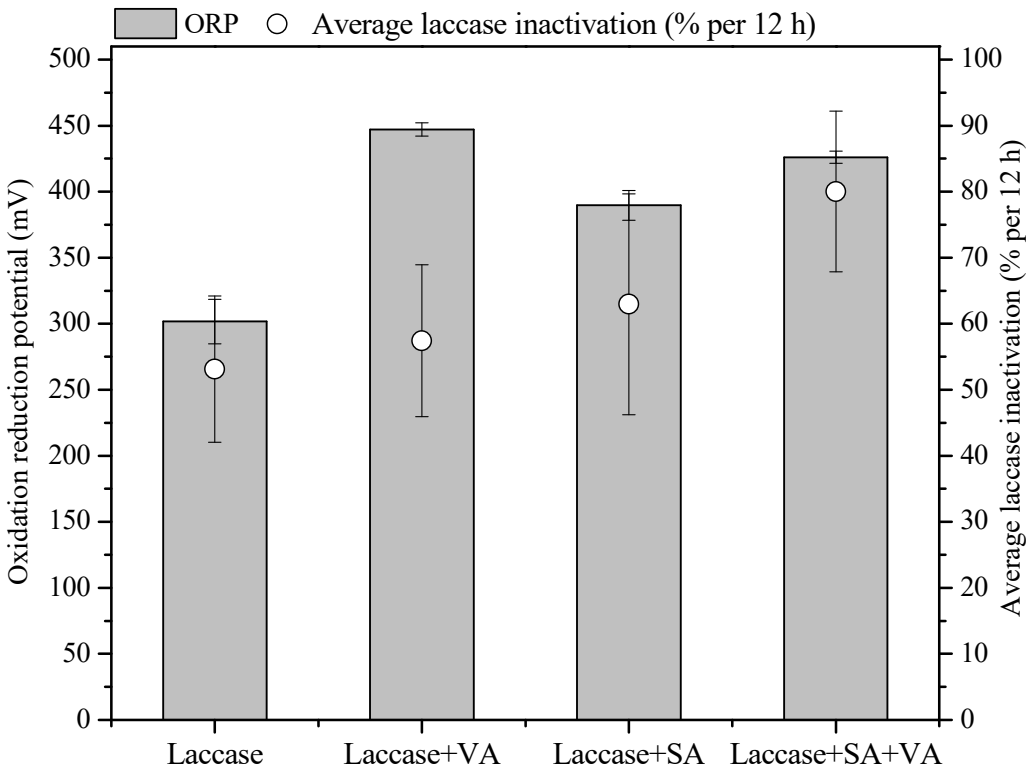
[Figure 2]


Degradation-Laccase
Degradation-Laccase+mediator
Observed MD retention
Non-phenolic TrOCs
Phenolic TrOCs
(a) Laccase+SA (0.5 mM)
(b) Laccase+VA (0.5 mM)
Fate of TrOCs (%)
0
20
40
60
80
100
Amitriptyline
Benzophenone
Octocrylene
Diclofenac
DEET
Metronidazole
Ametryn
Propoxur
Carbamazapine
Ibuprofen
Atrazine
Primidone
Clofibric acid
Naproxen
Gemifibrozil
Ketoprofen
Fenoprop
--
4-tert-Octylphenol
17β–Estradiol-17-acetate
17α – Ethinylestradiol
Triclosan
17ß – Estradiol
Estrone
Estriol
4-tert-Butylphenol
Bisphenol A
Oxybenzone
Salicylic acid
Pentachlorophenol
Enterolactone

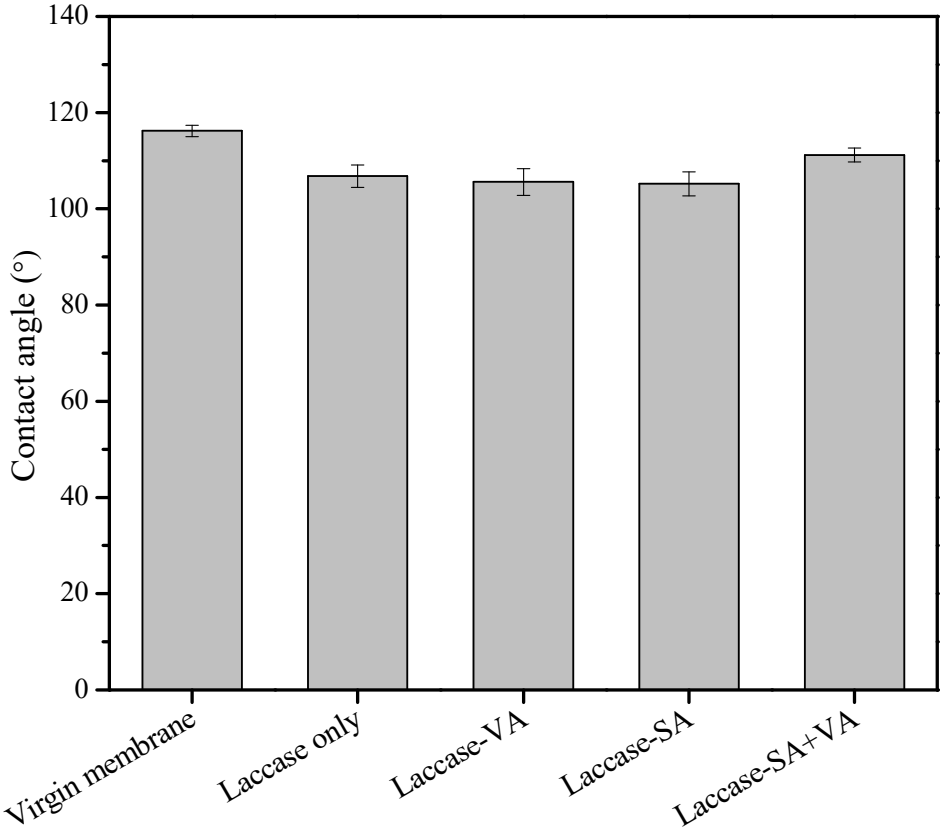
[Figure 3]


Degradation (%)
Ketoprofen
Clofibric acid
Naproxen
Primidone
Carbamazapine
Ibuprofen
0
20
40
60
80
100
Laccase
SA
VA
SA-VA

[Figure 4]


ORP
Average laccase inactivation (% per 12 h)
Oxidation reduction potential (mV)
Average laccase inactivation (% per 12 h)
0
50
100
150
200
250
300
350
400
450
500
0
10
20
30
40
50
60
70
80
90
100
Laccase
Laccase+VA
Laccase+SA
Laccase+SA+VA

[Figure 5]


Contact angle (°)
140
120
100
80
60
40
20
0
Virgin membrane
Laccase only
Laccase-VA
Laccase-SA
Laccase-SA+VA

[Figure 6]