

REVIEW NOTE – bg-2018-251

General comments

The Authors of the manuscript '*Potential for phenol biodegradation in cloud waters*' (bg-2018-251) isolated bacterial strains from cloud water (polluted with phenol) that are potentially capable of degrading phenol and its main degradation product (catechol). They also determined transcripts of genes coding for the enzymes responsible for phenol and catechol degradation including hydroxylase, monooxygenase and 1,2-dioxygenase. Based on these findings the Authors concluded that cloud water may be a potential environment for biotransformation of phenol by microorganisms including genus *Pseudomonas*, *Acinetobacter* and *Rhodococcus*.

In my opinion, the study is interesting and has significant scientific value and novelty; however it needs some major revision. The methods have been properly designed and the results and reliable.

Specific comments

Major points:

In 'Introduction' some information concerning toxic effects of phenol (with appropriate references) must be provided because the statement that phenol is toxic is not satisfactory

In conclusion the statement: In conclusion, this is the first report of the potential degradation of phenol by cloud organism should be changed to (for example): In conclusion, this is the first report showing that cloud water is inhabited by microorganisms that have phenol degradation ability

Page 5, line 154-155, GC-MS analysis, how the samples were evaporated (what was the temperature during evaporation? or/and was nitrogen used to eliminate solvent?)

Page 8, Phenol HPLC analysis, which was the limit of detection and limit of quantification of phenol?

Minor points:

Abstract, line 17, correct 'particularly toxic' to 'toxic'

Abstract, line 25, please provide full name of 'PUY'

Abstract, line 25, correct '0.74 $\mu\text{g}\cdot\text{L}^{-1}$ ' to '0.74 $\mu\text{g L}^{-1}$ '

Introduction, line 47, correct 'high toxicity' to 'toxicity' (in fact phenol is less toxic than most of phenols of anthropogenic origin or/and numerous other xenobiotics)

Page 3, line 98, correct 'bacteria' to 'bacteria strains'

Page 4, line 107 and 113, correct 'opening' to 'cleavage'

Page 4, line 116, correct 'concentration' to 'density'

Page 6, line 187, correct 'proteins' to 'enzymes'

Page 8, line 239, correct to: '150 mm x 4.6 mm'

Page 9, line 273 and 281, correct to: '2,3-dioxygenase'

Page 9, line 281, correct 'opening' to 'cleavage'

Page 10, line 314, correct to: long induction periods of enzymes

Page 10, line 322-333, correct sentence

Page 11, line,338-341, correct sentence as it is not clear

Page 12, correct: 'surface water' to 'polluted surface water' as phenol does not occurs at high concentrations in natural surface waters

Page 12, line 374, please provide full name of 'INA+'

Page 12, line 375 and 382, correct Joly et al., 2013 and Berge et al., 2014 to Joly et al. (2013) and Berge et al. (2014)

Page 12, line 388-389, correct sentence

Page 13, line 395-396, correct 'shorter molecules' to e.g 'intermediates'

Page 13, line 396, correct 'opening' to 'cleavage'

Page 13, line 409, correct 'biological and abiotic' to 'biotic and abiotic'

Page 14, line 425, correct to (for example). 'The most probably, microorganisms could participate to phenol remediation in the atmosphere'

Figure 1, correct to: '1,2-dioxygenase' and '2,3-dioxygenase'

Figure 2, correct to: 'monooxygenase'

Figure 3, correct to: 'monooxygenase' and '1,2-dioxygenase'

Figure 4B, Y-axis, correct to: 'Degradation of phenol (%)' as it is in Figure 4A

Technical comments

In the whole manuscript, 'minutes' must be corrected to 'min', 'hours' to 'h'.

Please also write (for example) '25 °C' instead of '25°C' and (for example) '1 mL' instead of '1mL'

English of the paper should be corrected in several places