

Off-line and on-line optical monitoring of microalgal growth

Dr. Scott Wallen

Academic Editor, PeerJ

Dear Dr. Wallen

We deeply appreciate the suggestions to our manuscript “**Off-line and on-line optical monitoring of microalgal growth**”. All suggestions were followed. We present the changes as follow (in blue):

Thank you again for your resubmission. The manuscript is improved but still has a large number of English grammatical and usage errors. Please consult a professional proofreader/scientific editing service before resubmitting.

[A professional proofreader/scientific editing service was consulted \(PeerJ editing service\).](#)

The two sentences in Lines 29-31 should include several references.

References were included:

Line 29

[“...\(Pulz and Gross, 2004; Spolaore et al., 2006; Mata et al., 2010; Niccolai et al., 2019\)...”](#)

Lines 30-31

[“...\(Wang et al., 2008; Abdel-Raouf et al., 2012; Show et al., 2019\)...”](#)

Lines 94-96 should be eliminated or worked into the Introduction

The sentence was relocated at the end of the “Introduction” section.

The following sentences beginning at Line 107 are not Materials and Methods and should be incorporated into the Introduction. "In a previous 108 study, the dry weight of the microalgae was correlated with the OD of the algae cultures (del Campo et al.,109 2014). Limitations of the OD technique as well as its applications to other species and another culture 110 medium were discussed by Griffiths and co-workers (Griffiths et al., 2011).

The sentences were relocated into the “Introduction” section.

Lines 216-217

[“..., and a final measurement on the seventh day...”](#) was deleted.

Editing service suggestions.

Line 13

The symbol “,” was deleted.

Line 15

“...It is shown...” was replaced with [“...we found...”](#)

Line 16

“...Moreover, with...” was replaced with “...By using...”
“...**was**...” was erased.

Line 19

“...To monitor...” was replaced with “...for...”

Lines 21-22

“...transform a fraction of the solar energy to biochemical energy in order to produce their own food...” was updated with “...produce their own food by transforming a fraction of solar energy to biochemical energy...”

Line 29

“...microalgae’s...” was replaced with “...its...”

Lines 30-31

“...the cleaning of residual water...” was replaced with “...residual water cleaning...”

Line 31

“...products, which contribute...” was replaced with “...contributors...”

Line 32-34

“... A wide review of on-line and off-line technologies to monitor physicochemical and biological parameters of microalgae was compiled by Havlik and co-workers...” was updated with “...Havlik and colleagues compiled a wide review of on-line and off-line technologies to monitor physicochemical and biological parameters of microalgae...”

Line 34

The word “also” was added between “are” and “several”

Line 39-40

“...and this prevents...” was replaced with “..., preventing...”

Line 45

A letter “n” was added in the word “harvestingn”

Line 46-47

“...their reaction centers’ characteristics...” was replaced with “...the characteristics of their reaction centers...”

Line 53

“,” was added after “temperature”.

Line 61

“... , however...” was replaced with “... . However...”

Line 63

“... . These....” was replaced with “...including:...”

Line 67-68

“...monitor their physiological state, including changes in...” was updated with “...monitor changes in their physiological state, such as in...”

Line 73

“...an approximate determination of Chl content in a non-destructive way using the Chl ratio...” was updated with “...an approximate **non-destructive determination of Chl content using the Chl ratio...**”

Line 77-80

“...At present, two Chl fluorescence approaches are used to monitor photosynthetic efficiency in microalgae mass cultures. These are rapid fluorescence induction and the saturation-pulse method (Masojídek et al., 2011), which are well known successful methods...” was updated with “...**Presently, two Chl fluorescence approaches are successfully used to monitor photosynthetic efficiency in microalgae mass cultures: rapid fluorescence induction and the saturation-pulse method (Masojídek et al., 2011)...**”

Line 85-86

“...methodos are proposed in this study in order to measure Chlamydomonas reinhardtii (C. reinhardtii) culture growth....” was replaced with “...**methods to measure Chlamydomonas reinhardtii (C. reinhardtii) culture growth are proposed in this study....**”

Line 87-90

“...C. reinhardtii is considered one of the most promising eukaryotic H₂ producers (Torzillo et al., 2015), which is why its study is relevant. The methodologies proposed here were applied to study the growth of C. reinhardtii. It is possible to apply the proposed methods to other species. However, results...” was updated with “...**The study of C. reinhardtii here is relevant since it is considered one of the most promising eukaryotic H₂ producers (Torzillo et al., 2015). It is possible to apply the proposed methods to other species but results...**”

Lines 94-96

The paragraph was located at the end of the “Introduction” section

Line 97

“...**were...**” was added after “and”

Line 103

“...use...” was replaced with “...**used...**”

Line 106

The word “**the**” after “monitor” was erased.

Line 108

“...the microalgae was...” was updated with “...**microalgae...**”

Line 109

A comma was added after “technique”

Line 110

A comma was added after “medium”

Line 112

“..., with continuous...” was replaced with “... **and continuous...**”

Line 117

“...difference being...” was replaced with “...difference **between them being**...”
The word “...**as**...” was erased.

Line 119

“...Therefore, the number...” was updated with “... **and the number**...”

Line 130

“...These were...” was updated with “...**These lamps were**...”

Line 130-131

“...For the fluorescent images, the pictures were captured in darkness and the culture only...”
was updated with “...**The fluorescent images, were captured in darkness and only the culture**...”

Line 135

The word “**the**” was deleted after “and”.

Lines 148-149

“...Parallel to the floor, as exciting radiation, six LEDs were placed (Stereon, Ultra Blue),...” was
updated with “...**As exciting radiation, six LEDs (Stereon, Ultra Blue) were placed parallel to the
floor,**...”

Lines 154-155

“...Traditionally, fluorescence is measured through the sample cuvette wall. Instead of that,...”
was updated with “...**Fluorescence traditionally is measured through the sample cuvette wall, but
our**...”

Lines 157-158

“...the material and the geometry of the cuvette are not important...” was replaced with “...**the
cuvette's geometry is not important**...”

Line 158

“By” was replaced with “**using**”

Line 160

“...; then, the...” was updated with “..., **then**...”

Line 175

The word “**the**” was deleted before “younger”

Lines 175-176

“... with a not developing photosynthetic apparatus...” was replaced with
“... **with a photosynthetic apparatus that isn't developing**...”

Line 177

“...the...” was replaced with “...**a**...”

Line 178

“...through...” was replaced with “...**by**...”

Line 179

“...can be successfully expressed by...” was updated with

“...is successfully expressed in...”

Line 182

“This” was replaced with “**Our**”

Line 197

“... file (S1)...” was updated with

“... (**File S1**)...”

Line 208

“... than at $\lambda=740$ nm...” was replaced with

“... **that of $\lambda=740$ nm**...”

Line 209

“are” was replaced with “**were**”

Line 211

“Increase” was replaced with “**increased**”

Line 214

“... it was possible to observe...” was replaced with “...**we observed**...”

Lines 217-218

“...As time went by, the F685/F740 fluorescence ratio decreased, and that means that the photosynthetic processes were improved...” was updated with

“... **Over time, the F685/F740 fluorescence ratio decreased, meaning that the photosynthetic processes had improved**...”

Line 222

“..., which means that the conditions are appropriate...” was updated with

“... **and the conditions were appropriate**...”

Line 227

“...Finally, equation 2...” was replaced with “...**Equation 2**...”

Line 232

“... It was possible to observe that cultures get darker with time...” was updated with

“... **We observed that cultures got darker with time**...”

Line 233

“...This prevents the passage...” was updated with

“...**preventing the passage**...”

Figure 3

“Throughout” was replaced with “**over**”

Line 241-242

“...In fact, luminosity is what diminishes importantly during cell growth since cells deflect or shadow light sources. In Figure 8, it is possible to observe...” was replaced with

“... **and luminosity is what more importantly diminishes during cell growth since cells deflect or shadow light sources. Figure 8 shows**...”

Line 248

“...A calculation of the correlations between the values of the three experiments confirms that...” was updated with

“...The correlations between the values of the three experiments confirm that...”

Line 254

The word “is” was replaced with “was”

Figure 7

“...Fluorescent beam...” was replaced with “...fluorescent beam...”

Line 255

“...In Figure 10, it is possible to observe...” was replaced with

“...Figure 10 shows...”

Line 256

“... is already related with...” was replaced with

“... is related to...”

Line 257

The word “notice” was replaced with “note”

Line 266

The word “happening” was deleted.

Line 267

“..., compared to...” was replaced with “...than...”

Line 268

“...decreases before and at a faster rate that the...” was updated with

“...decreases earlier and at a faster rate than the...”

Lines 269-270

“..., here it was demonstrated for the first time for C. reinhardtii cultures...” was replaced with

“... it was used for C. reinhardtii cultures for the first time here...”

Line 271

“through” was replaced with “over”

Line 272

“...was also shown to be useful to monitor...” was replaced with

“...was shown to be useful in monitoring...”

Line 273

“...were linearly correlated with...” was replaced with

“...correlated linearly with...”

Lines 274-276

“...for the cultures in a light/dark regime, this correlation was not found. Nevertheless, for the fluorescent beam penetration images, both the distance and the surface captured for the beam were linearly...” was replaced with

“...this correlation was not found for the cultures in a light/dark regime. Nevertheless, both the fluorescent beam penetration images’ distance and the surface captured for the beam linearly...”

Line 277

“Indeed” was erased.

Line 280

“...to study both research and industrial microalgae...” was replaced with

“... for both research and the study of industrial microalgae...”

Line 281

“...As a future study, in the case of having multispectral remote sensing reflectances both at 685...” was replaced with

“...In the case of multispectral remote sensing reflectances at both 685...”

Line 282

“...it would be feasible to use...” was replaced with

“...a future study should use...”

Line 288

“...their contribution to improve...” was replaced with

“...improving...”

Line 289

“...the manuscript...” was erased.

Best Regards.

The authors.