Reviewer's report

Title: The effect of sunlight exposure on interleukin-6 levels in depressive and non-depressive subjects

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Reviewer: Carolina Escobar

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The manuscript entitled “The effect of sunlight exposure on interleukin-6 levels in depressive and non-depressive subjects” by Levandovky R et al. examines whether the length of light exposure can influence the levels of interleukins in a Brazilian community where light pollution in the night is minimal. Interestingly sunlight exposure only had a positive correlation in depressive individuals, while in non-depressed subjects no effects were observed. There are several concerns about the background and interpretation of this study that require to be undertaken by the authors.

MAYOR COMPULSORY REVISIONS

Introduction

Authors use rodent references to sustain the regulation of cytokines by the light/dark cycle. Since this is a clinical study I suggest to use exclusively human references. Rats are nocturnal and some regulatory mechanisms have a different temporal order from humans (page 3 first paragraph).

The relationship between depression- melatonin regulation and citokines needs to be better explained: In page 3 second paragraph it is stated that “IL-6 diurnal variation to the light/dark rhythm is modulated by melatonin” and data are provided that IL-6 are high during the day. This suggests that during the night high melatonin levels will correlate with low levels of IL-6. Thus a healthy individual should have high levels of IL-6 during the day and low during the night? On the other hand it is indicated that depressive patients exhibit high levels of IL-6, would that be during day or night? How are melatonin levels in depressive patients? All this regulatory mechanism is not clearly described. This essential information is lacking while too much space was given to the description of melatonin regulation by the SCN.

Reference 22 describes that “The nocturnal decrease in interleukin-6 was smaller in people who reported more negative mood or fatigue and Subjective well-being is significantly associated with a greater nocturnal decrease of interleukin-6 and epinephrine” This is wrongly reported in the introduction see page 4 lines 4-5, thus giving the impression that low levels of IL-6 during the night reflect mood disorders.

In the introduction it is not justified why authors evaluated chronotypes and sleep quality. How is this linked with depression and interleukins?
Methods:
The strategy to measure light exposure needs better explanation. This variables is fundamental for the study and it is necessary to describe what type of information was collected for the description of work- and free days.

Discussion:
Data need to be discussed with regards of other similar studies. In the introduction it is mentioned that a previous group did not find changes in IL-6, melatonin ... after light therapy (refs 4 and 23). How does this fit with their findings?

In the introduction it is also mentioned that previous studies have reported high levels of interleukins in depressive patients, hoe do their data fit with such studies?

Authors also are not conclusive on the effects observed here, is this increase in IL-6 in depressive patients beneficial or nor?

In the introduction authors have emphasized the role of melatonin for interleukin regulation. Is it possible to include melatonin measurements? Moreover this relationship needs to be discussed in the context of their data and the depressive condition.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I declare that I have no competing interests