**Academic Review for Kühnhold et al.**

Overall, this article does an effective job of discussing the responses of *C. andromeda* holobionts to different levels of light intensity with respect to physiological and photosynthetic performance. I have evised the text of the article for flow/grammar, and have left a few comments in the text. In addition, I had the following comments/questions that may come up in the context of journal review and that you may with to address in whole or in part before journal submission:

**Major Points**

* In your Abstract, a bit more text clarifying the link between using *C. andromeda*  as a food source and the relevance of studying PCPs/AOA would be beneficial to clarify the importance of your study.
* A bit more discussion regarding how you selected your conditions for UVB treatment would be beneficial – is this narrow-band range the most physiologically relevant and intended to mimic real-world conditions? Based on ranges in prior studies/known information regarding the responses of particular pigments?
* Providing some further detail in your Results section to contextualize your findings for people without expertise working with jellyfish may be helpful (i.e. explaining the implications of umbrella pulsation rate to explain your choice to study it). In addition, a brief summary of the experimental approach used at the start of your Results may be helpful rather than jumping into exploring the data directly, as some readers may skip over the Materials and Methods when reading the article initially.
* In your Abstract and Conclusions you specifically mention the potential value of *C. andromeda* aquaculture in suburban/urban settings, and while your use of controlled laboratory conditions is certainly consistent with that, this isn’t really a part of your narrative that is brought up in the Introduction or Discussion sections. Consider adding a bit more text to supplement your introduction of this point.
* You mention detecting significant levels of chlorophyll *a*, chlorophyll *c2*, peridinin, and diadinoxanthin in your *C. andromeda* samples, yet in the next section you only examine the levels of two of these pigments as a function of light intensity. I would suggest adding a sentence explaining your chosen focus here.
* While discuss data collection at the two- and four-week time points as I understand it, your results for physiological indices (RGR, umbrella pulsation) only mention0 the four-week time point. Presumably the two-week time point was just a less significant version of any phenotypes observed after four weeks?
* Given that you discuss the poor growth performance of *C. andromeda* in your experimental system yet are presenting this article as a justificaiton for their further study as a possible food source, you may need to provide the “unpublished data” you metion suggesting that growth performance is better in the absence of spatial confinement.
* Was this study conducted a single time with four replicates per group? Replication may be necessary to further validate your findings.

**Minor Points**

* I have added several comments throughout the manuscript seeking clarification or providing suggestions on particular points. Please review these prior to journal submission and make any changes you feel are appropriate.
* Providing a brief definition for functional foods/nutraceuticals may be beneficial – otherwise, they risk sounding like buzzwords.
* Your title may benefit from some retooling – perhaps something like “Exploration of a new food source….” or something to that effect to more clearly link the study focus to the food source aspect?
* I would consider removing “e.g.” from your citations, unless this is standard practice in your target journal.
* For your Results section, I find it is generally more impactful to use section subheadings that describe your actual findings rather than simply naming the analyses conducted.
* Figure 3 needs a title before explaining the content of individual panels.
* Much of the text in your Figures is too small to easily read, and will likely be compressed further for publication – I would suggest regenerating them with a larger font size.
* In the text describing the data in Table 1, you report n-values (i.e. n < 0.01, etc.). Are these meant to be p-values?