

**The Effects of Light Quality on the
Morphology
and Hydrocarbon Production
of *Botryococcus braunii***

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ABSTRACT

Botryococcus braunii is a green, colonial microalga that can produce up to 75 % of its dry weight as liquid hydrocarbons that can be converted to a sustainable biofuel. Until now, no studies have been performed on the effects of light quality on *B. braunii* cell morphology and hydrocarbon production. This investigation focused on the effects of white light (WL), blue light (BL), green light (GL) and red light (RL) on cell morphology and hydrocarbon synthesis in *B. braunii*, strain Guadeloupe (race B). *B. braunii* dry biomass increased in WL and RL, but in BL and GL there was no growth. The average cell size was significantly larger ($P < 0.05$) in WL than the average cell size in RL and BL and GL. The amount of hydrocarbons synthesised was not affected by light quality, with a relative hydrocarbon of 38 % to 42 % per dry biomass across the different light regimes. Moreover, there was no change to the composition of hydrocarbons produce by *B. braunii* in the different light treatments.

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