In the present day, microalgae feedstocks are gaining interest in energy scenario due to their fast growth potential coupled with relatively high lipid, carbohydrate and nutrients contents. All of these properties render them an excellent source for biofuels such as biodiesel, bioethanol and biomethane; as well as a number of other valuable pharmaceutical and nutraceutical products. The present review is a critical appraisal of the commercialization potential of microalgae biofuels. The available literature on various aspects of microalgae for e.g. its cultivation, life cycle assessment, and conceptualization of an algal biorefinery, has been done. The evaluation of available information suggests the operational and maintenance cost along with maximization of oil-rich microalgae production is the key factor for successful commercialization of microalgae-based fuels.

**Key words:** microalgae, biofuels, nutraceutical products, pharmaceutical products

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