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## Investigation of plasma activated water in the growth of green microalgae (*Chlorella* spp.)

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The reactive oxygen nitrogen species (RONS) from plasma activation is intensively used in agriculture, particularly in the regulation of seeds germination and plants growth. It shows a promising effect on increasing the germination rate and promoting the growth of plants. This research employs plasma activated water (PAW) in cultivation of green algae (*Chlorella* spp.). The objective of this research was to introduce a comparison between the use of different fluids for cultivation of green microalgae. The used fluids were fertilized water, simulated-fertilized water, tap water, tap water treated with activated plasma for 2.5, 5.0 and 7.5 minutes. Samples of green microalgae were cultivated in these waters for 7 days. A comparative investigation was conducted and reported. It was found that concentration of the reactive oxygen nitrogen species increased with the treatment time. According to the growth of green algae, the plasma activated water provided a better result than any other until day 2. This indicates an effect of RONS on promoting the growth of green algae. Upon completion of the test, the fertilized water showed the highest growth. This finding could be distributed to a rapid reduction of the reactive oxygen nitrogen species. However, a well-controlled plasma activation would make PAW possible for industrial uses in the future.

Keywords: plasma activated water (PAW), green microalgae, *Chlorella* spp., growth rate and plasma arc discharge.

**Primary authors:** Dr YATONGCHAI, Chokchai (Maejo university); Ms SILAPASERT, Prangnapat (Maejo university); Dr SARAPIROM, Sureeporn (Maejo university)

**Presenter:** Ms SILAPASERT, Prangnapat (Maejo university)

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