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1P66 - What different effects can be taken by different liquid-dissolved gases on the concentration of aqueous RONS?

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The chemical process that occurs in plasma-liquid interaction is a key issue in plasma biomedical applications and clinical treatment processes. The researchers have discussed the effects of different plasma sources and liquid components on the generation of aqueous RONS [1-3] while almost no one cares about the different liquid-dissolved gases have what different influence on the concentration of aqueous RONS. Since the aqueous oxygen is involved in the formation and transformation of the aqueous RONS according to the researches, and the proportion of the gas component in the living body is different from the proportion of the gas component in water body in the atmospheric environment. Therefore, we designed an experiment, in which we dissolved different kinds of gases in double distilled water (DDW), including CO2, O2, N2 and air, to separate the effects of different gas components in the liquid on the formation of liquid active particles.
The experimental results show that the presence of aqueous oxygen plays an important role in the formation of ROS and RNS, which can promote the generation of various aqueous RONS, and nitrogen has a certain influence on the formation of RNS. CO2 also has a positive impact on the formation of RNS while it is slightly detrimental to the formation of OH. Taking H2O2 and NO2—as examples, the rule of H2O2 concentration in various DDWs shows: unprocessed (μM) > N2 (μM) (or O2 (μM)), and CO2 (μM) > O2 (or N2) > air-free(μM), and the rule of NO2—is: unprocessed (μM) > O2 (μM) (or N2 (μM)) and CO2 (μM) > O2 (or N2) > air free (μM).

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