

عنوان مقاله:

Evaluating the Effects of Dual Frequency Sonication Parameters on Acoustic Cavitation by Chemical Dosimeter Using Iodide

محل انتشار:

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خلاصه مقاله:

Background and Aims: Production of acoustic cavitation by sonication has been recently recommended as a targeted treatment. The experimental results from studies indicate that the activity of cavitation generated by bi- or multi-frequency ultrasound irradiation is higher than that caused by single frequency irradiation. In this study, effects dual (۱ MHz and ۴۰ kHz) and single frequency sonication on acoustic cavitation were investigated by chemical dosimeter using iodide. **Methods:** In this study, we investigated the exposure parameters in low level dual-frequency ultrasound in near fields of ۴۰ kHz and ۱ MHz in the progressive wave mode by chemical dosimeter using iodide. Finally, the effective protocol for enhancement of the inertial cavitation activity was determined. **Results:** It has been shown that the dosimeter absorbance in the continuous mode sonication is more than the pulse mode. Moreover, significant correlations were found between the time and intensity of single and dual frequency sonication and the iodide dosimeter absorbance. In constant energy, inertial cavitation activity in the pulse mode remained approximately constant. Among different combinations, the combined ultrasound sonication in continuous mode could produce a more remarkable enhancement of the inertial cavitation activity (۱.۷۸ times) than the algebraic sum. **Conclusion:** Simultaneous combined dual frequency sonication is more effective than single frequency sonication in producing the inertial cavitation activity.

کلمات کلیدی:

Ultrasound waves, Acoustic cavitation, Dual frequency sonication, Chemical dosimeter using, iodide

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