Method to generate cold atmospheric plasma-stimulated media to treat cancer

For successful cancer therapy, the most important aspect is selective eradication of cancer cells without damaging healthy cells. Cancer cells and normal cells have different thresholds for tolerance of reactive oxygen species (ROS) and reactive nitrogen species (RNS) before cell death (apoptosis) is induced. Previously, GW researchers invented a cold atmospheric plasma (CAP) therapy device to increase ROS in areas where tumors were surgically removed, in order to selectively kill any tumor cells that may have been left behind and prevent remission [Submission for FDA clearance of the CAP device is anticipated in 2016]. Subsequently, they showed that similar anti-cancer effects can be achieved indirectly by washing tissue with plasma-stimulated liquid (CAPSM).

In the present invention, GW researchers drastically improved the original method of generating CAPSM by submerging plasma discharge directly in the liquid as opposed to treating with plasma from above the liquid. The CAPSM generated by this novel method show higher concentration of reactive species and enhanced anti-cancer activities compared to previously described CAPSM generation methods. Given that CAPSM therapy holds promising cancer therapy potential, improvements and refinements in CAPSM generation will lead to greater efficacy of any future CAPSM therapies.

Application:
- Cancer therapy

Advantages:
- Higher levels of ROS and RNS generated in the media
- Improved anti-cancer effects
- Ability to treat cancer when direct plasma application is not available

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