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A novel cupping-assisted plasma treatment for skin disinfection. ZILAN XIONG[1], Huazhong University of Science and Technology — A novel plasma treatment method/plasma source called cupping-assisted plasma treatment/source for skin disinfection is introduced. The idea combines ancient Chinese 'cupping' technology with plasma sources to generate active plasma inside a reduced-pressure chamber attached to the skin. Advantages of this scheme include reducing the threshold voltage for plasma ignition and improving the spatial uniformity of the plasma treatment. In addition, the reduced pressure inside the cup should improve skin pore permeability and it simplifies attachment of the plasma device to the skin. Moreover, the plasma-generated active species are restricted inside the cup, raising local reactive species concentration and enhancing the measured surface disinfection rate. A surface micro-discharge (SMD) device is used as an example of a working plasma source. We report discharge characteristics as a function of pressure and applied voltage. When using a relatively low applied voltage, the antibacterial effect under reduced pressure showed enhanced antibacterial effects and was comparable with discharges operated at atmospheric pressure under higher voltage.

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