Cupping suction system with fuzzy logic controller design

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ABSTRACT

Cupping therapy represents an unconventional remedy which utilized combination of traditional and contemporary Islamic medications to expedite wellness restoration through stimulated blood and air extractions by application of vacuum on the human skin. A number of methods enclosing immediate engulfing of bitten wounds through the human's mouth, blood withdrawal through the assistance of leeches, as well as the operationalizing of heat or pump-based techniques through utilization of venerable instruments like organic horns and modernized approach like bamboo, plastic and glassware to develop the suction effect. Modern cupping mechanism especially recognized uncontrollable discharge of pressure amid the engulfing process following air dispersal through gaps in the hair. Such predicament then drove cupping practitioners to usage of the phlegm suction machine available within the market for engulfment on hairy areas of the human body. However, several disadvantages surfaced from its enormous size, inability for simultaneous suctions, as well as extended cupping interval and skilful operational requirement from manually administered suction power control for blister and skin damage preventions. Resolution to the aforementioned problems is proposed through the current paper by development of a cupping suction system as equipped with an automatic suction control and simultaneous suction outputs. The system additionally included the attributes of interval selection and alarm mechanism with time display for clarified interval indication towards better remedial outcomes. The system's installation of fuzzy control as the intelligent controller further works to ensure lowered power consumption and better engulfment control on the skin. Demonstrated results ultimately confirmed the proposed system as an efficient suction structure for reduced negative effect of cupping therapy on patients' skin and eased adoption among cupping practitioner.

KEYWORDS

Control system; Cupping; Fuzzy logic controller; Negative pressure; Suction

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