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**Packaging Shape and Its Relationship to the Quality of Drinking Water**

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**ABSTRACT**

The necessity of an effective packaging technique is rapidly growing alongside the development of food preservation technologies. Current packaging techniques, such as active packaging and intelligent packaging, in addition to the preservation techniques such as drying, freezing, smoking and chemical preservatives provide great solutions to extend food shelf life. Nevertheless, they have disadvantages related to cost, undesired effects on food and short or long term negative effects on human health, therefore a top priority in food sciences has been the elucidation of alternative, less stringent techniques. Applying the shape effect technique in food packaging combines preservation, packaging and water treatment in one process and is poised to be a safe, low cost, sustainable and innovative packaging solutions in the food industry. Halal production process should be an integrated processes from farm to fork, to produce not only food that is ritually blessed but must be wholesome, healthy, safe, clean, nutritious, quality and not harmful which means Tayyib. Shape effect is the enhanced energy fields generated inside some models of geometrical shapes, such as pyramid shape. This energy come from the interaction between packaging shape, the stored biological material and the surrounded electromagnetic radiation. There are many sources of electromagnetic radiation for example radio and television broadcasting stations, Wi-Fi antennas and mobile phone base stations. Tow electromagnetic simulation techniques FDTD and FEM were used to explain this interaction. What was found is that the peak level of electric and magnetic fields induced in water stored in pyramid-shaped container was higher than the peak level of the fields induced in water stored in the other containers. The effect of these energy fields on the physicochemical and microbiological parameters of water was determined by using the standard methods and on the molecular structure of water by using O-17 NMR. The results showed improvement in the quality of water stored in pyramid shaped container compared to the water stored in the other containers.

*Keywords: SAR, EM Simulation, shaped effect, Food packaging, Water-treatment*