



SHORT COMMUNICATION

# STUDIES ON SURFACE TENSION OF SELECTED JUICE FORMULATION BY DROP NUMBER METHOD USING TRAUBE'S STALAGMOMETER TECHNIQUE

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The determination of surface tension of three selected marketed juice formulations were carried out using Traube's Stalagmometer technique by drop number method which in turn aid in further identification, structural elucidation as well as determining chemical constituents. The formulation I (Orange Juice), formulation II (Aloe vera juice) and formulation III (Amla juice) were selected for the studies and were also evaluated to their same quantity mixture ratio with distilled water combination for estimation of different composition. The main aim and rationale of study was to evaluate the surface tension of selected formulations with distilled water. The 10% formulation mixture (I:II:III::1:1:1) with distilled water showed maximum surface tension (68.62 dyne/cm) and 90% formulation mixture with distilled water showed minimum surface tension (56.84 dyne/cm) amongst other compositions. The results revealed that all the percent composition values were less than standard. The 60% (58.85 dyne/cm), 70% (58.75 dyne/cm) and 80% (56.86 dyne/cm), 90% (56.84 dyne/cm) formulation mixture with distilled water showed approximately same surface tension value. In individual surface tension study, it was noted that formulation III *i.e.* Amla juice (61.24 dyne/cm) showed highest value and formulation I *i.e.* Orange juice (54.69 dyne/cm) showed lowest value comparison between three formulations under laboratory conditions.

**Key words:** Surface tension, Juice formulation, Drop number method, Traube's stalagmometer.

## INTRODUCTION

Juice is the liquid that is naturally contained in fruit or vegetable tissue. Juice is prepared by mechanically squeezing or macerating fresh fruits or vegetables flesh without the application of heat or solvents (Franke *et al* 2005). Surface tension is the force per unit length that must be applied parallel to the surface so as to counter balance the net inward pull. Surface tension has the units of dyne/cm in the CGS system and newton/m in the SI system. Traube's Stalagmometer is an instrument for determining exactly the number of drops in a given quantity of liquid, used as a measure of surface tension of a fluid or an instrument for measuring surface

tension by determining the exact number of drops in a given quantity of a liquid. The drop number method is based on the principle that a fixed volume of liquid is delivered as free falling from a capillary tube held vertically approximately proportional to the surface of the liquid. Surface tension is the result of the difference between attractions of molecule of the substance on the other side of the interface. The surface tension of distilled water is created by van der waals forces (an electronic force between the molecules in order to increase the surface tension); one would have to find a way of increasing the range of the force or strength of