

“MICROEMULSION SYSTEM AS A POTENTIAL ENCAPSULATION SYSTEM OF ASCORBIC ACID



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INTRODUCTION

- Microemulsions are clear, thermodynamically stable, isotropic liquid mixtures of oil, water and surfactant or surfactant mixture.
- Ascorbic acid is an essential nutrient involved in the repair of tissue and the enzymatic production of certain neurotransmitters. As ascorbic acid in solution undergoes rapid oxidation, its use in pharmaceutical products is limited above all by its low stability.
- In this study, surfactant mixtures containing Span 80 with Tween 80 series at various ratios were prepared with isopropyl myristate and water to produce “water in oil” microemulsions.

INGREDIENTS

- To obtain stable microemulsion systems, these ingredients are necessary:
 - a) Surfactants: Span 80 and Tween 80
 - b) Oil phase: isopropyl myristate
 - c) Ultra pure water
- The best results and largest microemulsions area obtained at 7:3 Span 80/Tween 80 ratio.
- Microemulsion isopropyl myristate /water/mixed surfactant (59.8:8:32.2 by weight) was selected from the constructed phase diagram for further physical characterization.

PHYSICOCHEMICAL CHARACTERIZATION

PHOTON CORRELATION SPECTROSCOPY (PCS)

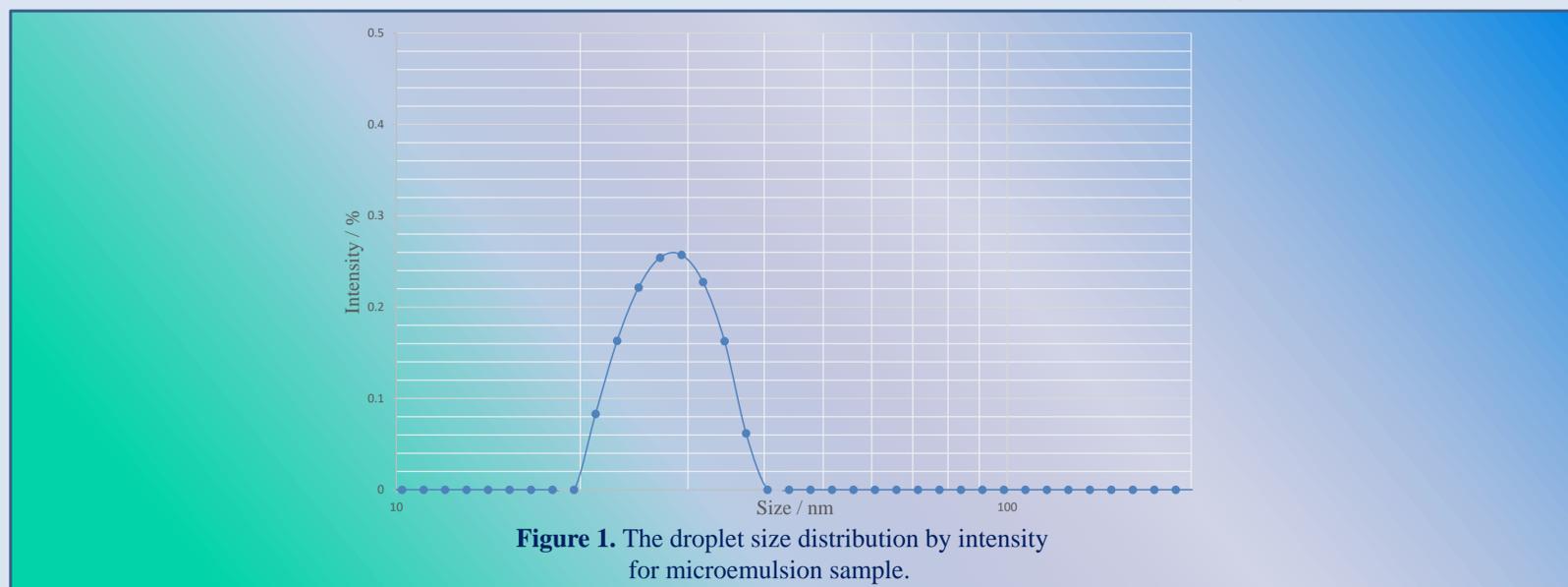


Table 1. Size, PDI, Refractive index, conductivity and surface tension of selected microemulsion

	Microemulsion sample
Size (nm)	44.78
Refractive index	1.46330
Conductivity (mS cm ⁻¹)	0.240
Surface tension (mNm ⁻¹)	30.05
PDI	0.1883

CONCLUSION

- The microemulsions sample had a droplet size distribution with a PDI value of 0.1883 and droplet size of 44.78 nm which indicates that a stable microemulsion was formed.
- The visual examination experiment was carried out over a period of 3 months in daily intervals for the first 1 months and weekly intervals for the subsequent months.
- The visual observation showed no evidence of phase separation or any precipitation or flocculation.
- The selected microemulsion sample will be used for encapsulation of ascorbic acid and to study the oxidation stability.

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