# Nanoemulsions as candidate vehicles for natural phenolic compound curcumin

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## Introduction

Phenolic antioxidants of natural origin have been very popular for their antioxidant, anticancer, anti-diabetic, anti-inflammatory and several other potent therapeutic activities
Curcuminoids are one such class of natural phenols, which are chief ingredients of turmeric ( popular South Asian spice), also responsible for the characteristic yellow colour. Of these, curcumin is one such compound, which possesses two phenolic rings as aromatic parts, substituted by methoxy groups and connected by an unsaturated chain having two carbonyl groups

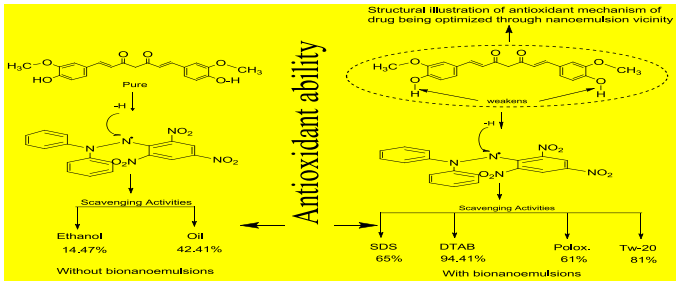
## Aim

Preparation and characterization of bio-nanoemulsions of unsaturated edible oil and biosurfactants studied through thermodynamic Process

## Methods & Materials

SDS, DTAB, poloxamer-407, Tw-20, curcumin, ethanol and glycerol, all purchased from Sigma Aldrich and used as such.
For preparation of nanoemulsions, firstly curcumin was added to cottonseed oil at a concentration of 3mM/mL, and stirred at 1000 rpm for 30 minutes, when it becomes completely soluble in the oil. This oil was henceforth considered as drug encapsulated oil
In a stepwise and distinguished manner, 0.01 to 0.05 mL oil (encapsulating the drug) was taken in a RBF and 2.5 mL ethanol, two drops of glycerol were stepwise added
The volume was thereafter made to roughly 35 mL using aqueous surfactant solution
For SDS, poloxamer and DTAB, 0.002m solutions were made while for poloxamer, 0.002% solution was made, due to its polymeric nature.

## Results & Discussions




## Conclusion

Curcumin has been thus established to be very rich and efficient natural bioactive antioxidant

Physicochemical attributes have been ably explained as dissolution and activity enhancing evidences

The exploration of altered routes with different carriers and activity supporters is also in active consideration

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## Tables

| Temp. (K) | % Encapsln. | % S.A. | % B.P. |
|---|---|---|---|
| | **SDS** | | |
| 298.15 | -0.020 | -3.08 | 0.06 |
| 303.15 | -0.039 | -7.91 | 0.16 |
| 308.15 | -0.008 | -14.55 | 0.12 |
| | **DTAB** | | |
| 298.15 | 0.072 | 0.23 | -3.52 |
| 303.15 | 0.073 | 1.00 | -5.56 |
| 308.15 | 0.096 | 0.31 | -0.24 |
| | **Poloxamer** | | |
| 298.15 | -0.052 | -6.19 | 1.80 |
| 303.15 | -0.318 | -6.45 | 1.27 |
| 308.15 | -0.125 | -3.69 | 0.53 |
| | **Tw-20** | | |
| 298.15 | 0.176 | 18.55 | 10.18 |
| 303.15 | 0.680 | 12.26 | -5.24 |
| 308.15 | 0.457 | 14.55 | 6.71 |

## Graphs