Aspee Shakilam Biotechnology Institute, NAU, SURAT

1.	Title	:	Effects of postharvest treatments of Calcium chloride ($CaCl_2$) on shelf life and quality characteristics of mango (*Mangifera indica cultivar Kesar)*.
2.	Location & Agro-climatic sub-region	:	Aspee Shakilam Biotechnology Institute, NAU, Surat South Gujarat Heavy Rainfall Zone
3.	Back ground information	:	Mango is one of the main fruits of our country and it is known as King of fruits. The cultivar Kesar is most delicious, juicy, pulpy, tasty and most favourite fruits of south Gujarat region. But their perishablity and lack of preservation in common refrigerator compel us to finish within 2-3 days after full ripening. Calcium has two major role in plant system first it support firmness of cell wall as calcium pectate and secondly it acts as secondary messenger in signal transduction pathway. The other roles are also accountable such as regulation of stomatal behaviour, calcium calmodulin complex etc. Calcium ions passively can diffuse within the cell wall structure because plant cell wall porosity is approximately 3.5 to 9.2 nm, while calcium ions are about 0.1 nm. In fruit preservation practices, when fruit parenchyma cells are dipped in a calcium salt solution, calcium ions are transported primarily through the apoplast, or intercellular spaces, where they are attracted by negatively charged carboxyl groups in the homogalacturonan that constitutes pectin in the middle lamella and cell wall. The negatively charged chloride or lactate ions remain unbound in solution. $CaCl_2$ treatments have been given on many fruits by different laboratory and they were shown positive results in extending the shelf life by keeping the quality trait. Hence, in this research, efforts will be done for extending the shelf life of mango with intact or elevated quality and aroma in our popular cultivar Kesar.
4.	Objectives	:	To study about various morphophysiological trait of mango

			(kesar) with exogenous application of $CaCl_2$. To investigate the biochemical trait of mango(Kesar) cultivars as affected by application of $CaCl_2$. To analyse the ripening enzymes of $CaCl_2$ treated mango (Kesar) fruits.
5.	Principal investigators and associates	:	Dr. Kamal Kant, ASBI, NAU, Surat Dr. Sanjay Jha, ASBI, NAU, Surat Dr. Alok Srivastava, NMCA, NAU, Surat
6.	Year of commencement	:	2021-22
7.	Crop and variety	:	Mango cv. Kesar
8.	Experimental details	:	a) Treatments: 4 (0,100, 200, 300 mM $CaCl_2$) b) Dipping time: 4 (0, 20, 40 and 60 min.) c) Repetition: 4
			Design: CRD Factorial
9.	Methodology	:	Selected equally mature Mango cv. Kesar first of all treated with different concentration of $CaCl_2$ solution using distilled water and different morphophysiological traits would be investigated under laboratory condition. Different quality trait would be measured following the method of previous research on different fruits. Analysis of ripening enzymes would be measured following the methods available in literature.
10.	Observation to be recorded	:	1. Fresh weight 2. Firmness 3. Shelf life 4. Appearance of colour 5. Ionic leakage 6. Carotenoids 7. Ascorbic acid 8. Phenolics 9. Total Soluble solids, 10. Total sugar 11. Free amino acid

			12. Polygalacturonase 13. Pectinmethylesterase 14. ACC synthase 15. ACC oxidase