BIOMEDICAL RESEARCH AND INNOVATION CENTER [BRIC-MIST]
MILITARY INSTITUTE OF SCIENCE AND TECHNOLOGY
Mirpur Cantonment Dhaka- 1216, Bangladesh,
EXCHANGE: 8031111, FAX: 88-02-9011311, Website: www.mist.ac.bd , E-mail: bric.bme@bme.mist.ac.bd

Sample Test Report

Serial No BME-00101	**Lab Name** Biochemistry Lab, BME Dept., MIST	**Report Delivery Date** 24 October 2024
Name of the Client	Leeings Bd	**Test Performance Date** 22 October 2024
Contact Person (Name & Designation)	Biprodab Mogumdar Researcher	**Sample Receiving Date** 11 October 2024
Address of the Clients (Including Tel, Fax, Email)	Department of Applied Chemistry and Chemical Engineering (ACCE), BSMRSTU, Bangladesh Phone: +8801804193985, E-mail: biprodabbsmrstu@gmail.com	
Product	Liquid Sample	
Product Description (composition)	Ginger oil, Onion oil, Clove oil, cardamom oil, Lemon Fragrance, Dimefluthrin, Water, Peppermint oil, Lavender oil	
User Sample ID	MSQ-3	

S/N	Test Type	Method/ Instrument	Compounds	Rmks
01	Chemical Compound Analysis	FTIR	Dimefluthrin	
			1,8- cineole	
			Eugenol	
			Flavonoids	
			Gingerols	
			Zingerone	
			Menthol	

Test Conducted by:
Md. Tobibul Islam
Lecturer
Dept of Biomedical Engineering
Military Institute of Science and Technology (MIST)
Mirpur Cantonment, Dhaka-1216

Test Supervised by:
Lt Col Md Maruf Hasan, PhD
Secretary, CATS-MIST (BME)
BME Dept, MIST

CATS MIST (BME)
Date 27/11/24

Countersigned by:
Colonel Mohummad Shariful Islam, psc
Director, CATS-MIST (BME)
BME Dept, MIST

Note:
a. The result reported here pertains only to the sample received in the laboratory.
b. The precision & accuracy are defined only for the laboratory process.
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Sample Test Analysis

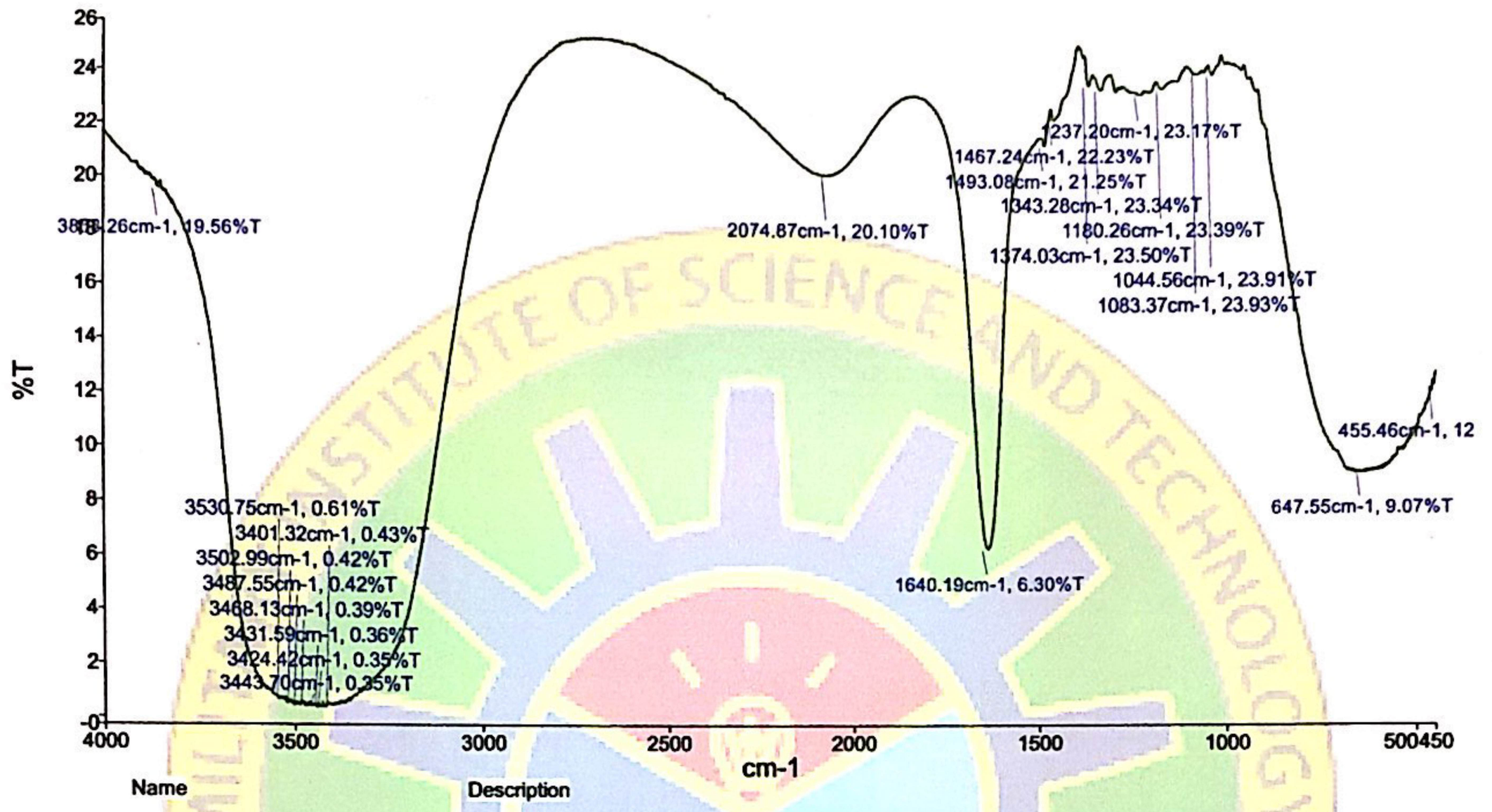

Figure 1: FTIR spectra curve

Table 1: Analysis of the peak location and shape of the IR bands of the main chemical functional groups of the test sample from FTIR spectra curve

S/N	Peak Wavenumber	Functional group	Compounds
1.	1500–1600 cm^{-1}	C=C Stretching (Aromatic Ring)	Dimefluthrin
	1000–1300 cm^{-1}	C-O Stretching (Ester Group)	
	1350–1470 cm^{-1}	C-H Bending (Aliphatic and Aromatic)	
	700–900 cm^{-1}	C-H Bending (Aromatic Ring)	
2.	1350–1470 cm^{-1}	C-H Bending (Aliphatic)	1,8- cineole
	1000–1150 cm^{-1}	C-O-C Stretching (Ether)	
	950–1200 cm^{-1}	C-C Stretching (Cyclic Ring)	
3.	3200–3600 cm^{-1}	O-H Stretching (Phenolic Group)	Eugenol
	1450–1600 cm^{-1}	C=C Stretching (Aromatic Ring)	
	1200–1300 cm^{-1}	C-O Stretching (Phenolic Group)	
4.	1620–1720 cm^{-1}	C=O Stretching (Carbonyl Group)	Flavonoids
	1350–1470 cm^{-1}	C-H Bending (Aromatic and Aliphatic)	
	1100–1200 cm^{-1}	C-O-C ether bonds.	
	1000–1300 cm^{-1}	C-O Stretching (Phenolic or Ether Groups)	

CATS MIST (BME) Date 27/1/24

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Sample Test Analysis

5.	3200–3600 cm^{-1}	O-H Stretching (Hydroxyl Groups)	Gingerols
	Aromatic: 3000–3100 cm^{-1} Aliphatic: 2800–3000 cm^{-1}	C-H Stretching (Aromatic and Aliphatic)	
	1650–1750 cm^{-1}	C=O Stretching (Carbonyl Group)	
	1000–1300 cm^{-1}	C-O Stretching (Phenolic and Ether Groups)	
6.	3200–3600 cm^{-1}	O-H Stretching (Hydroxyl Group)	Zingerone
	1650–1750 cm^{-1}	C=O Stretching (Ketone Group)	
	1350–1470 cm^{-1}	C-H Bending (Aromatic and Aliphatic)	
7.	3200–3600 cm^{-1}	O-H Stretching (Hydroxyl Groups)	Menthol
	Aromatic: 3000–3100 cm^{-1} Aliphatic: 2800–3000 cm^{-1}	C-H Stretching (Aromatic and Aliphatic)	
	1650–1750 cm^{-1}	C=O Stretching (Carbonyl Group)	
	1000–1300 cm^{-1}	C-O Stretching (Phenolic and Ether Groups)	
	1350–1470 cm^{-1}	C-H Bending (Aromatic and Aliphatic)	

CATS MIST (BME) Date 27/1/24
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