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To compare sulphur 1x, 2x and 3x from crude sulphur along with sugar of milk with microscopic study and FTIR

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Abstract
Background: Through this study prepared the Sulphur 1X, 2X and 3X from crude Sulphur powder which undergoes into the microscopic study and FTIR (Fourier transform infrared spectroscopy).
Methodology: Preparation of sample from Crude Sulphur Along With Sugar Of Milk As vehicle in the Drug and vehicle ratio of (1:9). These samples were prepared into Sulphur 1X, 2X and 3X. Sample study were done by microscopic view and FTIR (Fourier transform infrared spectroscopy).
Results: Analysis done under the microscope shows the crystalline arrangement in Sulphur powder with yellow in colour, Regular margins, flower appearance. Sugar of milk appears like white crystalline arrangement with irregular margins, Sulphur 1X Powder shows small crystalline arrangement as crude Sulphur and Sugar of milk, white in colour and having irregular margins, Sulphur 2X shows smaller crystalline arrangement as Compare to Sulphur 1X, white in colour, irregular margins, whereas in Sulphur 3X more small crystalline shape as compared to Sulphur 2X, white in colour, irregular margins. Whereas in FTIR (Fourier transform infrared spectroscopy) the maximum transmission of Crude Sulphur powder is at 549.53 cm^{-1}, Maximum transmission of Sugar of milk is at 1071.06 cm^{-1}, Sulphur 1X is at 1024.32 cm^{-1}, Sulphur 2X is at 1024.87 cm^{-1} and Sulphur 3X is at 1024.92 cm^{-1}

Keywords: Sulphur powder, crude sulphur powder, FTIR

Introduction
Sulfur. The brimstone of the Good book, sulfur was undoubtedly experienced by ancient mankind close to geothermal sources, for example, volcanoes and fountains. Sulfur's two gem structures, monoclinic and rhombic, both have a dissolving temperature simply over the limit of water at one climate. Under pressure, as under the earth, water temperature can surpass the softening temperature for sulfur. Since sulfur doesn't break down in water, the fluid sulfur quickly sets as it arrives at the world's surface, leaving the unmistakable non-metal light yellow fragile strong. The Frasch cycle for mining sulfur does the very same as the geothermal interaction. Superheated water under tension is siphoned into the earth and recovered with softened sulfur in it, emulating the normal interaction for sulfur openness. There is another non-translucent type of essential sulfur that can be made by liquefying glasslike sulfur, yet at the same the undefined allotrope is shaky, returning to one of the translucent structures on standing. Sulfur consumes in air (the stone that consumes) to shape sulfur dioxide. This is the most vital phase in the assembling of sulfuric corrosive, by a long shot the most utilized compound of sulfur. It has been said that how much sulfuric corrosive made is a great proportion of the degree of industrialization of a country. Sulfur is one of the fundamental fixings in the vulcanization of elastic.
Homeopathic arrangement of medication involves super high weakenings as their medicine. These are ready by progressive weakening with a vehicle which is known as intensity and the interaction is called as Potentization or Dynamization. During this interaction the weakening breaks the Avogadro's cutoff [2] Avogadro's Breaking point is an edge limit where there is no chance of presence of unique atoms over the weakening of Avogadro's steady which is 6.02254 x 1023. When the power goes above 23x in Decimal size of potentization, it crosses as far as possible [3].

FTIR

FTIR spectroscopy is a vibrational spectroscopic procedure that can be utilized to optically test the atomic changes related with unhealthy tissues [4-6]. The technique is utilized to track down additional moderate methods of investigation to gauge qualities inside cancer tissue and cells that would permit exact and exact task of the practical gatherings, holding types, and atomic compliances. Otherworldly groups in vibrational spectra are atom explicit and give direct data about the biochemical creation. FTIR tops are generally thin and much of the time can be related with the vibration of a specific synthetic bond (or a solitary utilitarian gathering) in the particle [7, 8].

The high resolution infrared spectra of the $^{32}S^{16}O^{18}O$ molecule were recorded for the first time with a Bruker IFS 120 HR Fourier transform interferometer and analysed in the region of 1550–1950 cm^{-1} where the bands V1+V2 and V2+V3 are located. About 1050 and 1570 transitions were assigned in the experimental spectra with the maximum values of quantum numbers Vmax./V1max. equal to 64/16 and 58/19 to the bands v1+v2 and v2+v3, respectively. The subsequent weighted fit of experimentally assigned transitions was made with the Hamiltonian model which takes into account the resonance interactions between the studied vibrational states. As the result, a set of 16 fitted parameters was obtained which reproduces the initial 1442 ro-vibrational energy values obtained from the assigned transitions with the drms=3.7×10−4cm−1. An analysis of more than 4050 experimental ro-vibrational line intensities of the v1+v2 and v2+v3 bands of $^{32}S^{16}O_2$ was made, and a set of 7 effective dipole moment parameters was obtained which reproduce the initial experimental line intensities with the drms=6.9%. Values of these parameters, being re-calculated to the values of corresponding parameters of the $^{34}S^{16}O_2$, $^{32}S^{18}O_2$ and $^{32}S^{16}O^{18}O$ species were used for calculation of line intensities in the v1+v2 and v2+v3 bands of these three isotopologues. A list of transitions with their line intensities in the region of 1550–1950 cm^{-1} for the four mentioned species is generated.

Materials and Methodology

Type of study: Analytical procedure

Time duration: 1 week

Tool: FTIR (Fourier Transform Infrared spectroscopy), Microscope.

Site of study: CR4D, Department of Homoeopathic Pharmacy from Jawaharlal Nehru Homoeopathic Medical College, Parul University

Medicinal product: Sulphur powder

Vehicle: Sugar of milk

Preparation

Preaparation of Suphur 1X, 2X and 3 X form crude Sulphur powder along with sugar of milk. The steps should be given as;

Mesaurement

Suplur powder- 6.5 gm

Sugar of milk- 58,5 gm

Division of Sugar of milk

After measurement, divide the sugar of milk into three equal parts by making rectangular slab on porcelain tile

Sulphur 1X

For preparation, take 1 part of Sulphur (0.065 gm) in mortar with 1st part of sugar of milk (19.5 gm) in a mortar and start trituration for 6 minutes trituration, 3 minutes scrapping, 1 minute mixing for 10 minutes. After this, repeat the same procedure for next 10 minutes. At the end of 20 minutes, add the 2nd part of sugar of milk (19.5 gm) starts trituration for 6 minutes, scrapping for 3 minutes and mixing for 1 minutes. Repeat the same procedure for next 10 minutes. At the edn of 40 minutes, add the third part of sugar of milk (19.5 gm) in same mortar with trituration 6 minutes, scrapping for 3 minutes and mixing for 1 minutes. Repeat the same procedure for next 10 minutes. At the end, we will get Sulphur 1 X Potency.

Sulphur 2X

For preparation, take 1 part of Sulphur 1X (0.065 gm) in mortar with 1st part of sugar of milk (19.5 gm) in a mortar and start trituration for 6 minutes trituration, 3 minutes scrapping, 1 minute mixing. After this, repeat the same procedure for next 10 minutes. At the end of 20 minutes, add the 2nd part of sugar of milk (19.5 gm) starts trituration for 6 minutes, scrapping for 3 minutes and mixing for 1 minutes. Repeat the same procedure for next 10 minutes. At the end of 40 minutes, add the third part of sugar of milk (19.5 gm) in same mortar with trituration 6 minutes, scrapping for 3 minutes and mixing for 1 minutes. Repeat the same procedure for next 10 minutes. At the end, we will get Sulphur 1 X Potency.

Sulphur 3X

For preparation, take 1 part of Sulphur 2X (0.065 gm) in mortar with 1st part of sugar of milk (19.5 gm) in a mortar and start trituration for 6 minutes trituration, 3 minutes scrapping, 1 minute mixing for 10 minutes. After this, repeat the same procedure for next 10 minutes. At the end of 20 minutes, add the 2nd part of sugar of milk (19.5 gm) starts trituration for 6 minutes, scrapping for 3 minutes and mixing for 1 minutes. Repeat the same procedure for next 10 minutes. At the end of 40 minutes, add the third part of sugar of milk (19.5 gm) in same mortar with trituration 6 minutes, scrapping for 3 minutes and mixing for 1 minutes. Repeat the same procedure for next 10 minutes. At the end, we will get Sulphur 1 X Potency.

Observation and Results

Preparation of Sulphur 1X, 2X and 3X from crude Sulphur along with sugar of milk as a vehicle, analysis done under the Microscope and FTIR (Fourier transform infrared spectroscopy). The structural variance are shown below;

(Microscopic study)

Fig 1: Sulphur 1X Potency

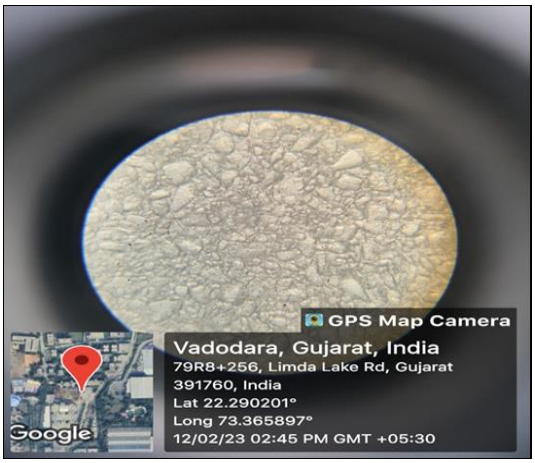

Fig 2: Sulphur 2X Potency

Fig 3: Sulphur 3X Potency

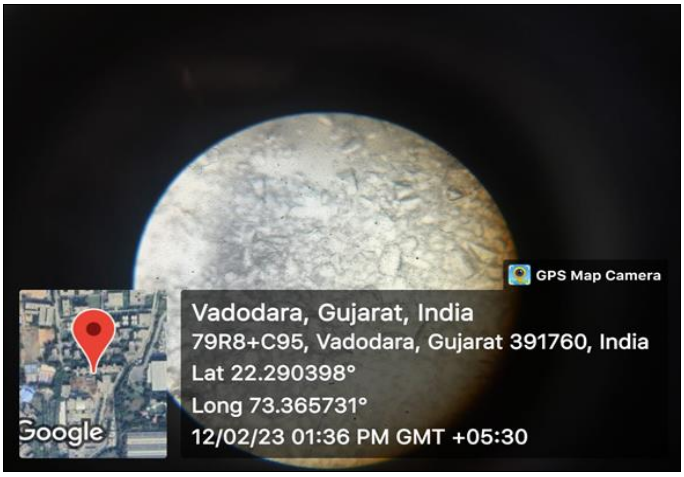

Fig 4: Sugar of milk

Fig 5: Sulphur powder

Table 1: Microscopic view of Sulphur 1X, 2X, 3X Sulphur powder, sugar of milk

S. no.	Sample name	Colour	Shape	Margins
1.	Sulphur powder	Yellow	Small fine powder like	Irregular
2.	Sugar of milk	White	Small crystalline arrangement	Irregular margins
3.	Sulphur 1X	White	Small crystalline arrangement	Irregular margins
4.	Sulphur 2X	White	More Small crystalline arrangement as Sulphur 1 X	Irregular margins
5.	Sulphur 3X	White	More Small crystalline arrangement as Sulphur 2 X	Irregular margins

FTIR (Fourier Transform infrared spectroscopy)

Whereas in FTIR (Fourier transform infrared spectroscopy) the maximum transmission of Crude Sulphur powder is at 549.53 cm^{-1}, Maximum transmission of Sugar of milk is at 1071.06 cm^{-1}, Sulphur 1X is at 1024.32 cm^{-1}, Sulphur 2X is at 1024.87 cm^{-1} and Sulphur 3X is at 1024.92 cm^{-1}

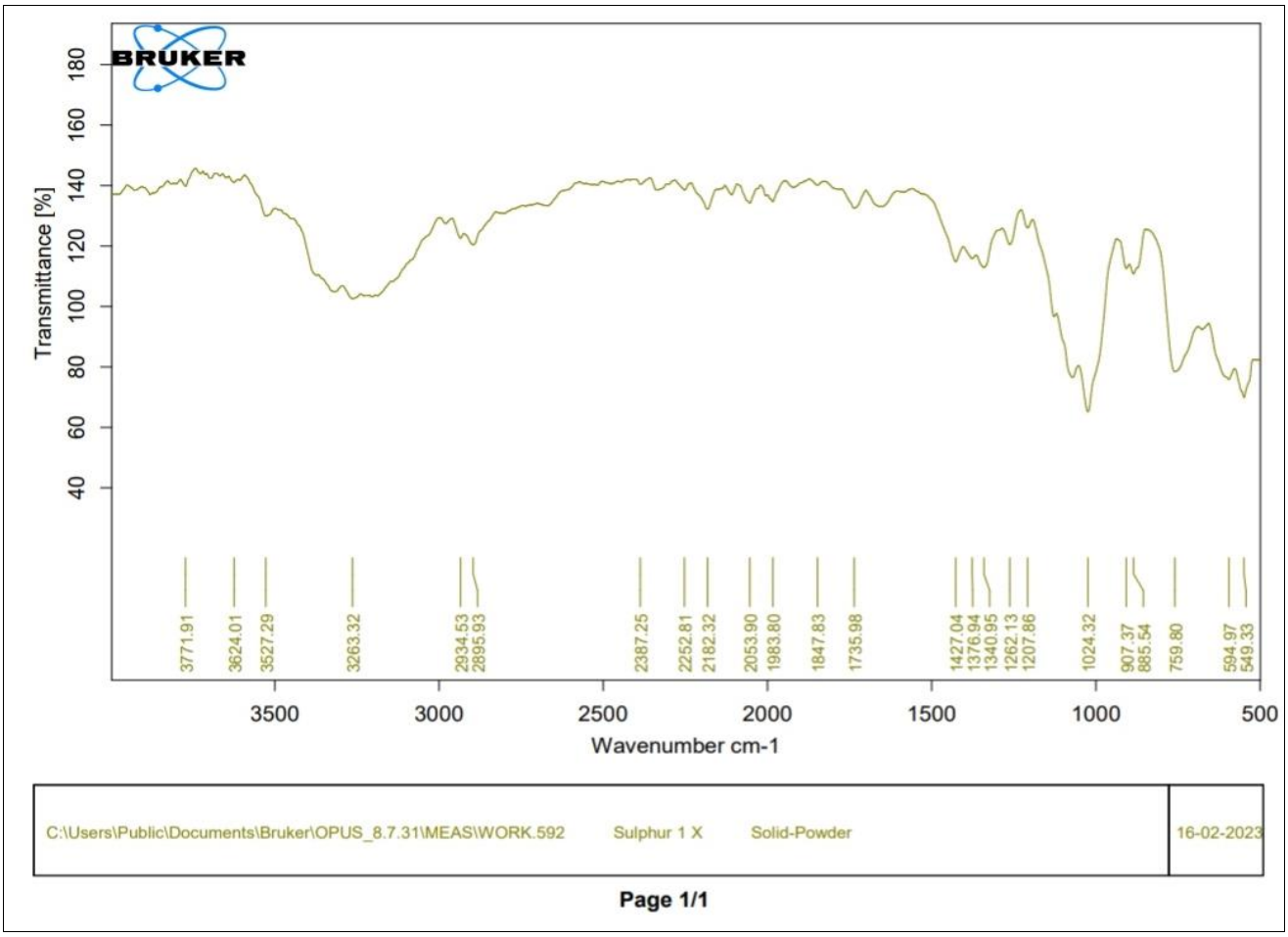

Fig 6: Maximum transmission of Sulphur 1X

(Figure. No. 6. The S-O extending and S-O bowing of sulfates tops showed up at 1207- 1024.32 cm^{-1} also, 759.80 cm^{-1}. The alkyl thioketones (- C=S) of sulfur intensifies vibrations found at the scope of 1262.31cm-1)

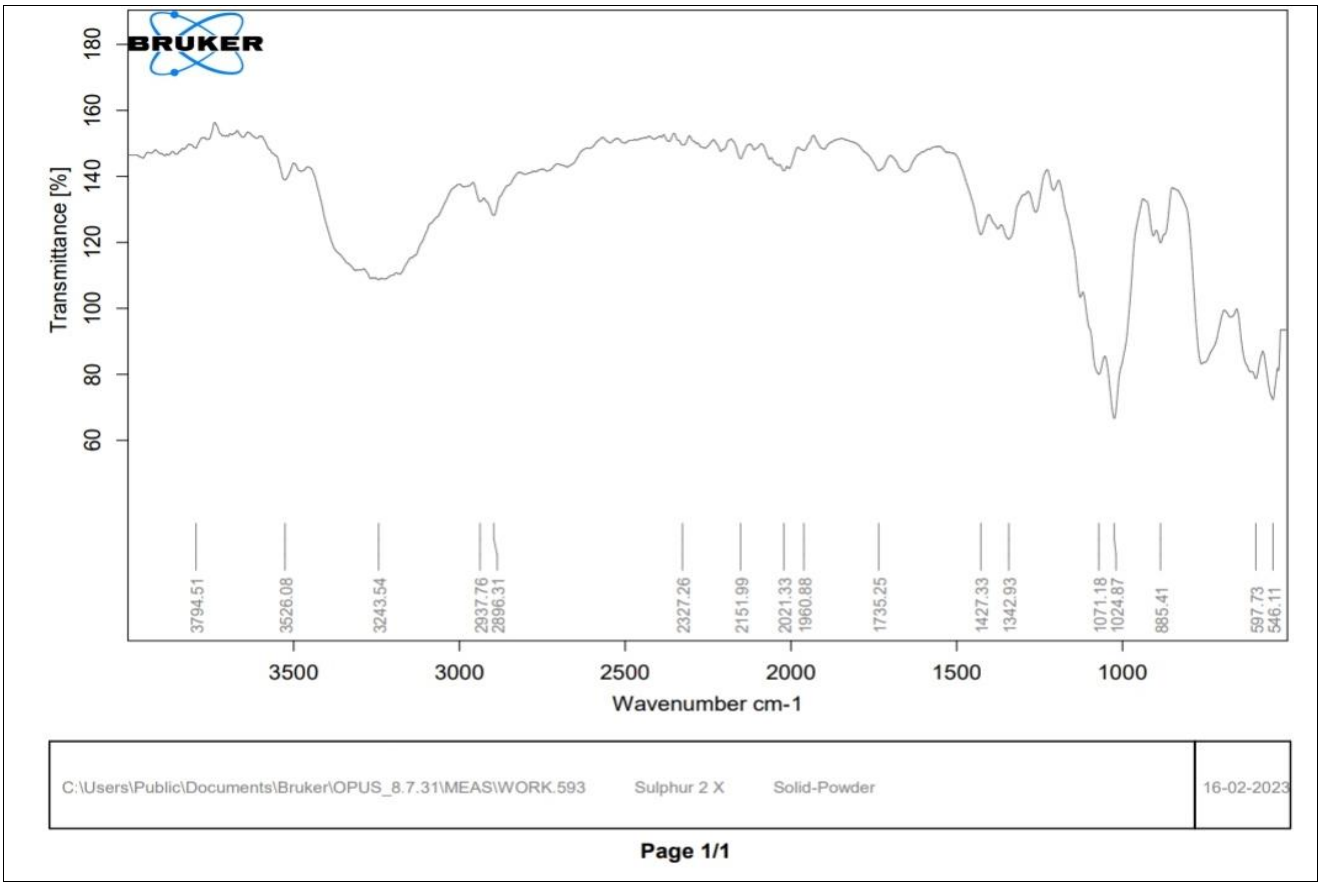

Fig 7: Maximum transmission of Sulphur 2X

(**Figure. no. 7.** The S-O extending and S-O bowing of sulfates tops showed up at 1071.18- 1024.87 cm^{-1}also, 885 cm^{-1}. The alkyl thioketones (- C=S) of sulfur intensifies vibrations found at the scope of 1427.33- 1342.93 cm^{-1})

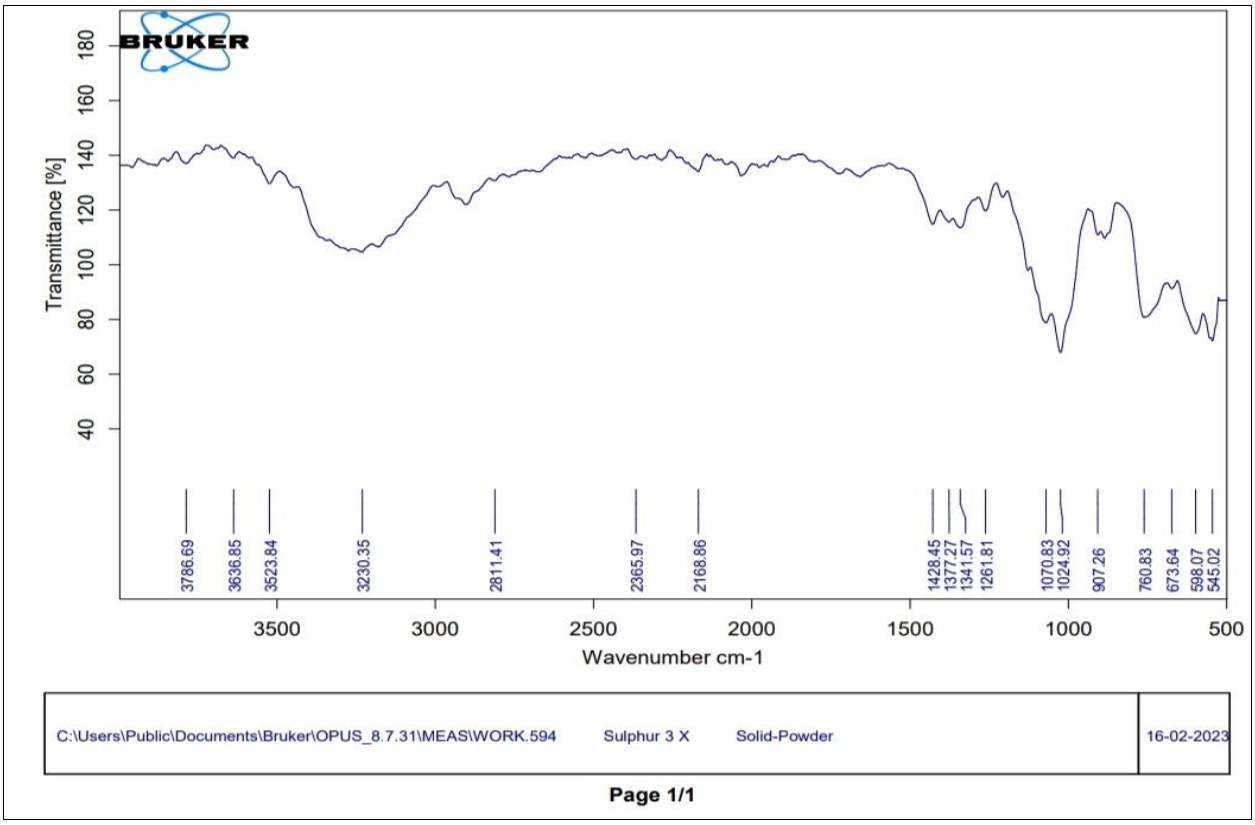

Fig 8: Maximum transmission of Sulphur 3X

(**Figure. No. 8.** The S-O extending and S-O bowing of sulfates tops showed up at 1070.83- 1024.92 cm^{-1}also, 673.64- 596.07cm^{-1}. The alkyl thioketones (- C=S) of sulfur intensifies vibrations found at the scope of 1261.81- 1070.83 cm^{-1})

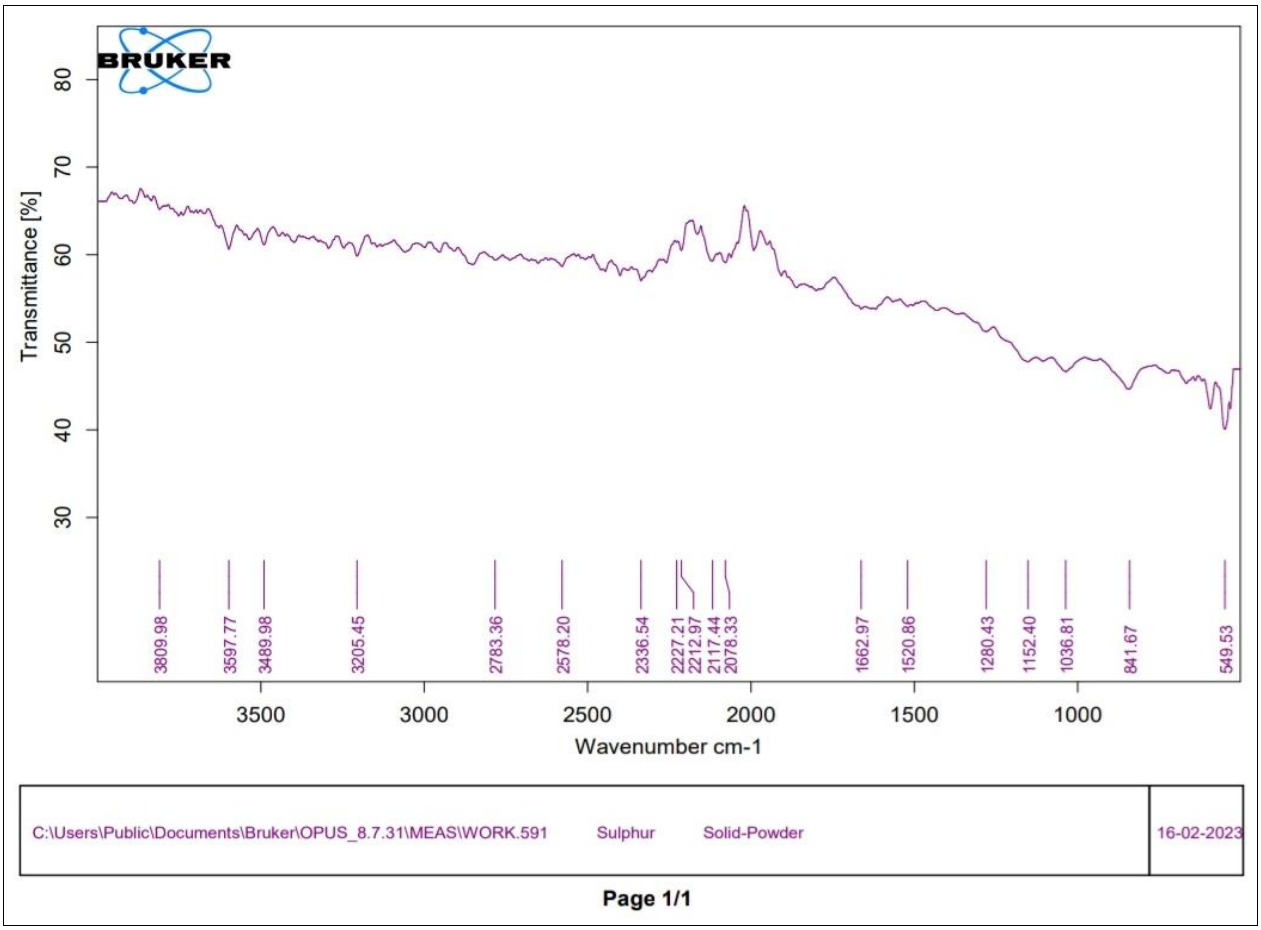

Fig 9: Maximum transmission of Sulphur powder

(Figure. No. 9. The wide absorption bands at 3600-2500 cm -1 are related to -NH and -OH groups. The strong absorption peak at 1650 cm -1 represents the -C=O group, and the absorption peaks at 1210 and 1051 cm -1 may be assigned to -CH 3 and -CH 2 groups, respectively. So it can be concluded that some amphiphilic protein molecules, are attached to the surface of elemental sulfur particles, suggesting that the characteristics of elemental sulfur. The S-O extending and S-O bowing of sulfates tops showed up at 1140-1080cm^{-1}also, 680-610cm^{-1}. The alkyl thioketones (- C=S) of sulfur intensifies vibrations found at the scope of 1240-1050cm^{-1})

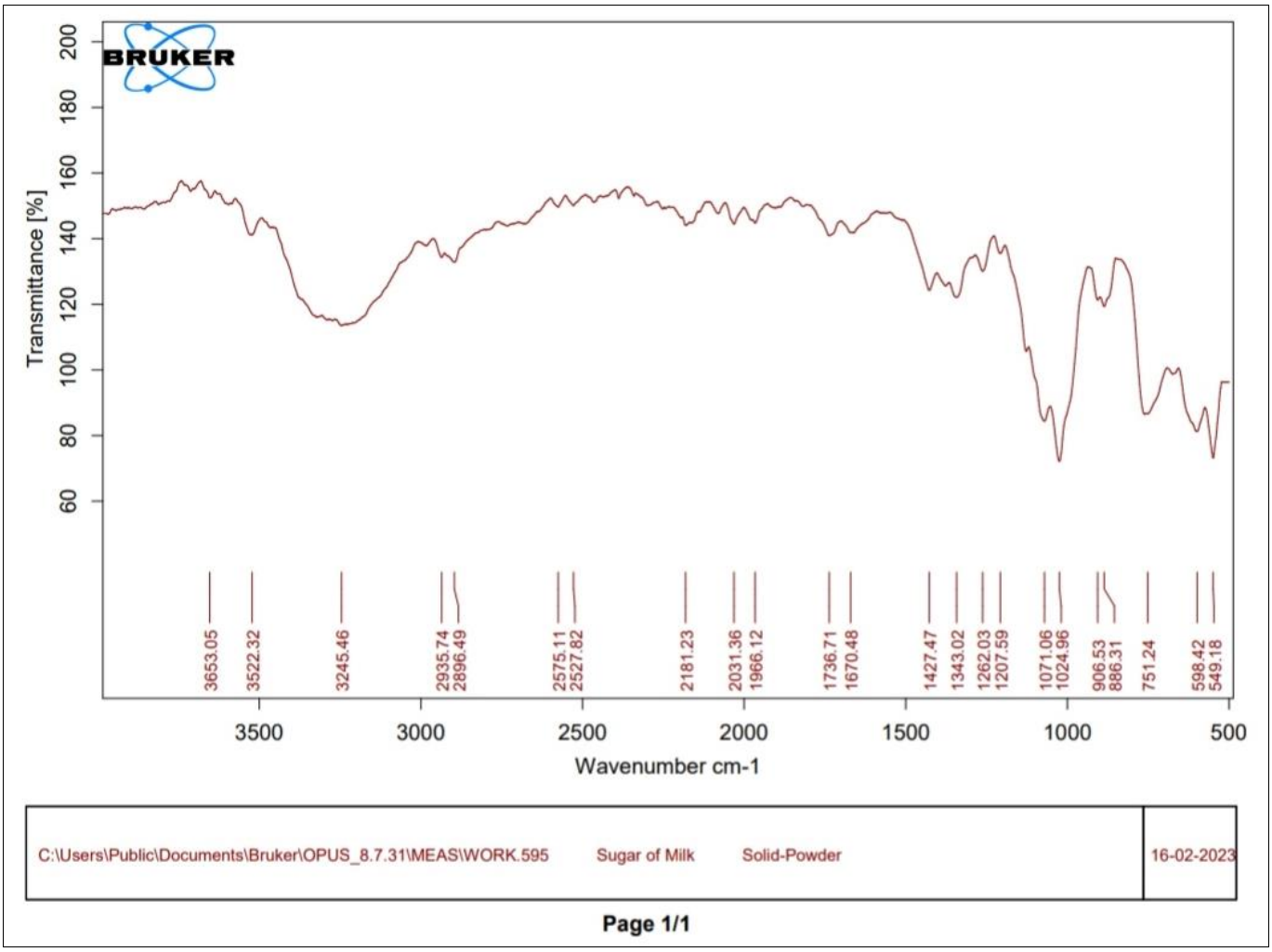

Fig 10: Maximum transmission of Sugar of milk

(Figure. No. 10. Infrared absorption spectra of sugars in milk, in the region of 900–3000 cm^{-1})

Conclusion

Through this study it was found that while doing trituration the mass particle gets converted into massless particles, reduction in size of particle.

Conflict of interest: No such.

Acknowledgement

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