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DETECTION OF OLEUM ADULTERATION

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ABSTRACT

With an improvement in technology and miniaturization of sensors, there have been attempts to utilize the new technology in various areas to improve the quality of human life. One main area of research that has seen an adoption of the technology is the healthcare sector.

The people in need of healthcare services find it very expensive this is particularly true in developing countries. As a result, this project is an attempt to solve a healthcare problem currently society is facing. The main objective of the project was to design a remote healthcaresystem. It's comprised of three main parts. The first part being, detection of patient's vitals usingsensors, second for sending data to cloud storage and the last part was providing the detected data for remote viewing. Remote viewing of the data enables a doctor or guardian to monitor a patient's health progress away from hospital premises.

INTRODUCTION

Usually, people are very fond of foods it may be home-cooked food or roadside food. Therefore, large amounts of oils are needed to cope up with the high consumption of oils for deep-fat frying. Because of more profits, alternative ways are added to this situation among these ways is to find another heating medium for deep-fat frying.

Edible oils and fats, which chemically comprise major [triacylglycerols (TAGs)] and minor (sterols, carotenoids and tocopherols) components, are known to be essential nutritionalrequirements for humans. A healthy adult need approximately 5 g daily of linolenic and unsaturated fatty acids, which cannot be manufactured within the body. Therefore, oils and fats support the daily routine diet. Furthermore, oils have different uses; for example, olive oil is used as lighting fuel and is also an essential component in natural soaps and cosmetics. Other commonly used oils include corn oil, which is considered to be the most common cooking oil and can be used in salad dressing. Thus, the global demand for edible oils is huge.

Edible oils have economical and nutritional benefits. However, some oils are expensive; for example, extra virgin olive oil (EVOO) is usually more expensive than any other vegetableoil as a result of its delicious flavor and its high content of vitamins and antioxidants. Moreover, olive oil plays an important role in the economy of many countries; for example, in Tunisia, olive trees cover an area of around 1.7 million hectares and account for approximately 4% of the olive oil produced in the world. Additionally, in the State ofPalestine, olive oil is known as a primary fat for consumption and is crucial in Palestinian lifeand economy. Interestingly,

approximately 183 000 ha of land in the State of Palestine is used for agriculture, and approximately half is used for olive trees.6 Fig. 1.1 represents the olive oil supply and demand from 1993 to 2018 in Palestine.

Adulteration in edible oils can cause several problems and fatal effects on consumer health. Some of these effects may lead to death; for example, the Spanish olive oil syndrome killed over 600 people because non-edible rapeseed oil was sold as an edible one and even as olive oil. Therefore, finding a suitable method to detect adulteration is necessary.

The major and minor components of edible oils can generally be used to detect adulteration because each oil has special components at a known level, thus making them possibledetection tools. In other words, olive oil, which has a high price, is often adulterated withseed oils, such as sunflower oil (SFO), soybean oil (SoO), and corn oil (CO). Therefore, the compositions of olive oil, such as fatty acid, can be used to detect the olive oil adulteration with different types of vegetable oils, such as soybean, walnut and canola, with a level below 5%. Fig. 1.2 shows the fatty acid composition of different edible oils.

Type of fatty acid

Type of oil	Stearic acid(C18:0)	Oleic acid(C18:1)	Linoleic (C18:2)	Linolenic (C18:3)
Olive oil	0.5-5%	55-88%	3.5-21	0-1.5%
Corn oil	2-5%	19-49%	34-62	0-1%
Cottonseed	26-35%	18-24%	42-52	0-1%
Soya bean	0.3-4.1%	2.4-23.3%	2.6-52.2	3.5-5.6%
Rapeseed	1.6-2%	59.9-62%	20-22	9-10%
Hazelnut	1-3%	70-82%	8-17	0.1%
Sunflower	1-7%	14-40%	48-74	0.09-0.12%

Fig 1: Types of fatty acid

III METHODOLOGY

This record sums up the most fundamental and imperative examinations in the location of debased food, strikingly oil, utilizing sensors like mq3 , conductivity, and pH level. These sensors are utilized to identify oil amount and quality. Microbial activity is settled using gas sensor, first rate milk should have no pungency, so pungency of the oil is assessed by using a pH sensor and moreover amount of moisture in oil is assessed by using a conductivity sensor.

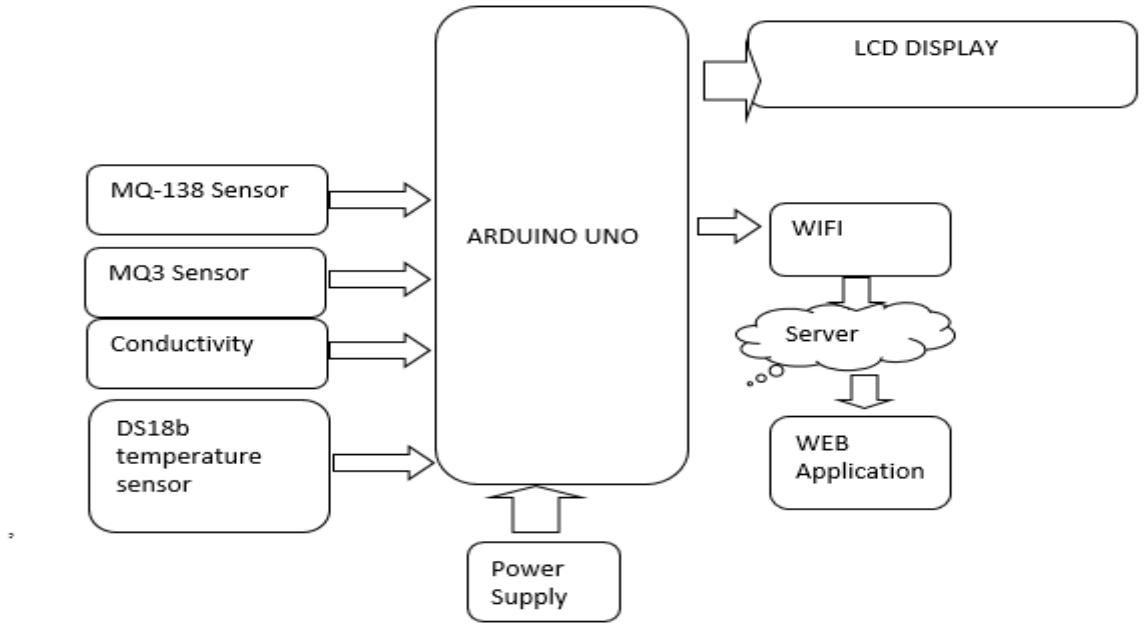

Fig 2: Methodology of Oleum Adulteration detector

It is carried out utilizing Arduino regulator and it is customized with neural network classifier for minimal expense and exact oil defilement testing. Nature of oil is arranged utilizing Back Propagation Neural Network and the values are displayed in Adafruit io.

CONCLUSION:

The thing to be noted is that the analysis of trace contaminants is challenging not only due to the need for sample preparation and enrichment but also due to the need for complex multidimensional chromatography. The adulterent level detector in edible oil using IoT is suitable for detecting the contamination of edible oil, this makes the system cost-efficient.

SUMMARY:

Deep frying of same oil generates oxidation products that maybe harmful compounds. These compounds cause health risks such as asthma, Blood Pressure and Cardio Vascular diseases etc., The development of an instrument which monitors the oil quality can reduce human health risks, also the degraded oil can be used in bio diesel production.

FUTURE SCOPE:

Through this endeavor, we can help our culture better comprehend cooking oil. It's appropriate for food and health agencies to utilize. Every residence can benefit from the suggested system. by knowing the paraffin level present in cooking oil. To verify these valuesthe project can be used by the authorities and food inspection department.

REFERENCES

1] Wen-ding Huang, Sanchali Deb, Young-Sik Seo, SmithaRao, Mu Chiao, "A Passive Radio-Frequency pH-Sensing Tag for Wireless Food-Quality Monitoring," IEEE Sensors Journal, Vol. 12, No. 3, March 2012.

[2] R. Almaghrabi, G. Villalobos, P. Pouladzadeh, "A Novel Method for Measuring Nutrition Intake Based on Food Image," in Proc. IEEE International Instrumentation and Measurement Technology Conference, Graz, Austria, 2012, pp. 366 – 370.

[3] Rupali Patil, Isha Patil, Vaishnavi Nagane, S. S. Joshi, "Detection of Adulteration in Milk Using Embedded", in International Journal of Engineering Inventions, Volume 8, Issue 1, pp. 71-75, Jan. 2019.

[4] Ameeta Sharma, Neha Batra, Anjali Garg, Ankita Saxena, "Food Adulteration," IJRASET.

[5] Po-Ren Chung, Chun-Ta Tzeng, Ming-TsunKe, and Chia-Yen Lee "Formaldehyde Gas Sensors: A Review."

[6] "Formaldehyde adulteration in fish as a public health concern and need for mass awareness," Journal of the inland Fisheries Society of India.

[7] Frank M. Brewster, "Handling Congealing Oil and Paraffin Problems in the Appalachian Fields," in Society of Petroleum Engineers.

[8] Pradeep S., P. Lakshminarayana, Varsha R., Shriya K. Kota "Screening of Adulterants in Milk," IJCRR.