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A REVIEW ON WOOD PRESSED EDIBLE OILS.

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ABSTRACT

Most of the fatty acids, vitamin E, and several phytochemicals required in the daily human diet to facilitate the necessary physiological processes can be found in edible vegetable oils. Natural wood pressed plant oils are more popular as a result of rising consumer caution and interest in their potential health benefits. There are a wide variety of unusual edible plant oils on the market, but much remains unclear about their quality and composition. The purpose of this investigation was to ascertain physicochemical characteristics like moisture content, viscosity, saponification, peroxide value, iodine value, acid value of the wood pressed oil samples. All the results obtained were in permissible range. When this values were compared with the values of refined edible oil, wood pressed oil found to be healthier. Beside this, the method utilized to extract oil is ecofriendly without using harmful chemicals and hence the nutrition remains unaffected.

Keywords – wood pressed oil, moisture content, iodine value, saponification value, and peroxide value.

INTRODUCTION

A plant, animal, or synthetic fat that is acceptable for food preparation is referred to as edible oil or cooking oil. In a nutshell, edible oils are oils that can be consumed by humans. Edible oils include olive oil, soybean oil, coconut oil, groundnut oil sunflower oil and many others. Edible oils are crucial components of our daily diet since they contain several minerals, essential fatty acids and fat-soluble vitamins. (1, 2, 3)

In the past, individuals would go to oil mills with an empty can to buy cooking oil. These oil mills were unique in that they produced oil naturally using a wooden press. Things have evolved during the past few decades. In many ways, technology has become ubiquitous. Due to the introduction of refined oil, wood-pressed oil is now only utilized in a handful of remote settlements. Today's fast-paced modern society has an impact on everyone's daily existence. The most prominent and crucial case in point is the rising prevalence of different types of illness

among human populations. This modernity has an impact not only on human existence, but also on the individual's physique. In today's world, we must be attentive and vigilant about the quality of food.

The refined oil is extremely hazardous to one's health. (4) For the purpose of seeds oil extracting process, highly concentrated mechanical and chemical techniques are used to produce refined cooking oils.(5) The various steps involved in processing of oil are expeller press or solvent extraction, degumming, chemical refining, oxidation, neutralization, bleaching, filtration, deodorization, hydrogenation which require chemicals. In addition to this, several chemicals and solvents are utilized throughout the extraction process. (6) This technique is regarded as advantageous since it maximizes the amount of oil extracted from the seed while minimizing any loss that may occur to meet need of oil in the market. (7) Because of this procedure, the seeds are stripped of all their naturally occurring nutrients, resulting in a final product that is devoid of flavor and offers no positive effects on our health. Nothing that goes through that many chemical processes can be considered safe for human consumption.(8) This contributes to a rise in disease rates especially, heart disease. Taking into consideration all of these factors as conscientious citizens, the majority of people are now gravitating toward organic goods, the consumption of wood pressed oil being the most prominent illustration of this trend. However, as people become more health conscious, wood-pressed oil is making a comeback.

The harmful consequences of refined oil on human health have now been acknowledged. Because all of the wood pressed oil comes from traditional methods, which are inherently environmentally favorable. The extraction process in traditional wood pressing is not heated in any way as heating deteriorate the quality of oil. (9, 10) The wooden axis is used to smash the seeds. The majority of the extraction process's thermal energy is dissipated by the axis's wood construction. Since no artificial solvents are used, the process is entirely organic. Since the oil produced via cold pressing will retain its molecular structure, this process is more natural. Wood-pressed oil has a lower yield but is far better for health than the refined variety and give all nutrients to our body. It do not contain any harmful chemicals as compared with refined oil which is made up by different process which involve plant extraction. In this extraction process, vegetables get extracted with organic solvent. This involvement of chemicals is harmful for consumption.

Very little research is carried out to know the physico-chemical parameters of wood pressed oil and yet an intense research is yet to be needed to know more about quality of oil. Since only a few communities in Maharashtra's Konkan region use the traditional method of extracting oil from wood pressed methods. Villagers supply raw seed materials to wood pressed extraction mills, which extract oil. Lanja tehsil in Maharashtra's Ratnagiri District is home to one such village. There is no investigation into the physicochemical parameters that are involved. As a

result, conducting consistent quality checks on this oil extracted from wood pressed method is an absolute necessity. In this paper, various physicochemical parameters were utilized in order to check the compositional quality of a variety of oils. In this review, six different oil samples were considered which are widely used and preferred by local people. These oils are wood pressed coconut oil, rice brand oil, groundnut oil, sesame oil, sunflower oil and soybean oil. Physico-chemical parameters that were determined are moisture content, viscosity, saponification, iodine value, peroxide value, acid value, of the oil samples. (11)

MATERIAL AND METHODS -

All the oil samples were collected from local wood pressed oil plant of Lanja, dist. Ratnagiri and Chandgad, Dist. Kolhapur. All the chemicals which are utilized for the experiments were AR graded. All of the oil samples were taken into the chemistry lab, and all of the experiments were performed. All the experiments were performed by following standard procedure. (12, 13, 14)

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RESULTS AND DISCUSSIONS

Table 1. Physicochemical properties of wood pressed edible oils and refined oil.

Name of oils	Density in (g/mol)		Moisture content in (%)		Viscosity in (cP)		Saponification value in (mg KOH/g)		Iodine value in (g)		Acid value in (mg KOH/g)		Peroxide value in (meq)	
	I	II	I	II	I	II	I	II	I	II	I	II	I	II
Ground nut oil	0.893	0.893(16)	8.8	7.8(16)	46	46(16)	196	196(15)	25.40	23.40(16)	7.6272	8.8272(15)	0.003	0.005(16)
Coconut oil	0.878	0.878(16)	9.2	8.8(16)	35	35(16)	257.6	257.6(17)	5.08	4.08(17)	5.0848	6.0848(17)	0.003	0.005(16)
Sesame oil	0.872	0.872(16)	9.2	7.8(16)	44	44(16)	190.4	190.4(18)	20.32	19.22(18)	10.169	11.2696(18)	0.003	0.005(16)
Sunflower oil	0.870	0.918(16)	9.0	8.5(16)	61	49(16)	178	180(19)	40.64	56.34(19)	7.6272	8.5272(19)	0.003	0.005(16)
Rice brand oil	0.910	0.920(16)	9.1	9.0(16)	49	46(16)	155	157(20)	56.44	33.67(20)	4.8970	5.89(20)	0.003	0.005(16)
Soybean oil	0.780	0.919(16)	8.8	8.9(16)	55	48(16)	157	160(21)	45.90	38(21)	5.8780	6.0(21)	0.003	0.005(16)

I- Values of wood pressed oil

II- Values of refined oil with references.

The quality of wood pressed oil were analyzed by testing its physicochemical parameters such as moisture content, density, saponification value, acid value, peroxide ion value and iodine value and compared it with physicochemical parameters of refined oil. Results of all analysis are given in table 1.

Density –

Density of an oil is an object where we discussed either that oil will float on water or not, because water has the highest density. If oil has low value of density, it floats on water. The result tabulated in table 1 shows that groundnut oil has the high density of 0.893 g/cm^3, then coconut oil, sesame oil has 0.872 g/cm^3 density. Over all this samples, sunflower oil has the lowest density 0.870g/cm^3. This value of densities are for wood pressed oil sample. But the values of density of refined oil are different. All the densities of wood pressed oil are lower than that of the data given for refined oil value which shows that refining process increases the density of refined oil sample.

Moisture content –

Coconut oil and sesame oil has the highest moisture value 9.2%. Moisture value for sunflower oil is 9.0% and lowest value for groundnut oil is 8.8%. Higher the value of moisture content help them their high usage in food and industrial sector. These values are for wood pressed oil sample, when it compared with refined oil samples, it shows that the moisture content decreases for all oil samples by one.

Viscosity –

Over all these samples, groundnut oil has higher viscosity with 46 cP, then sesame oil has 44 cP viscosity and coconut oil, sunflower oil have the lowest viscosity that is 35cP. On comparison with the values of refined oil samples, values of viscosity increases because in refined oil, solvent extraction process affect the viscosity.

Saponification -

Saponification value gives the information about the Fatty acid molecular weight data from a representative oil sample. Therefore, The highest fatty acid weight gives the lowest saponification value and vice versa. In all this six samples, coconut oil has high saponification value as 257.6 mgKOH/g, then groundnut oil and sesame oil have 196 mgKOH/g and 190.04 mgKOH/g respectively of saponification value, sunflower oil has the lowest saponification value as170 mgKOH/g. This data indicates coconut oil has short length structure and sunflower oil has

long length structure. Those values are for wood pressed oil samples but on comparison with refined oil data, it shows that the saponification value not as much affected by refined process.

Iodine value –

Iodine value indicates the presence of unsaturation in oil sample which determines the stability of oil samples towards chemical reaction. Here sunflower oil has the highest iodine value with 40.62 gm, then groundnut and sesame oil has 25.40, 20.32 gm iodine value. The lowest value of iodine is recorded for coconut oil is 5.08mg. Therefore sunflower oil has higher degree of unsaturation and coconut oil has lowest degree of unsaturation. On comparison with refined oil data the refining process do not affect the iodine value of oil sample.

Acid value –

Acid value of oil is always related to the purity of oil. Higher the acid value, the oil is less pure and lower the acid value, oil is highly pure. Here sesame oil has the highest acid value 10.16. Therefore, it is less pure oil for cooking then groundnut oil and sunflower oil has 7.625 acid value. Lowest acid value is recorded for coconut oil that is 5.004 which indicates this oil is pure and safe for cooking propose. On comparing with refined oil data, it shows that the acid value of refined oil sample increases as compared to wood pressed oil data, which further indicates the purity of oil is affected when refining process is involved for extraction.

Peroxide value -

Peroxide ion value indicates the rancidity of oil. Here, all the oils show equal and same peroxide ion value that is 0.003meq for wood pressed oil sample. Whereas, for refined oil, value is 0.005meq. This decrease in the value for wood pressed oil indicates that the wood pressed oil has good quality as compared to refined oil data sample.

CONCLUSION

The values obtained in the results are within the allowable range, which is what is expected of an excellent edible oil extracted through wood pressed method. Therefore, oil extracted from wood pressed method is safe for human consumption. The fact that this ancient method does not involve any chemical refining processes contributes to its high level of safety. In addition, the straightforward nature of the method ensures that the nutritional worth of the oil is not altered.

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