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Physiochemical characteristics of sesame seeds

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Abstract

Current Study was aim to evaluate some Physiochemical characters of sesame seed for that some seed samples of sesame were analyzed chemically and also physically. One in the study it was seen that the values of Physical and chemical properties include average weight of 2000 seeds, true density, moisture content, carbohydrates, Proteins, crude fiber, ash content, crude fat, ca, Zn, Fe which was seen to be 3.86 - 4.40g, 1286.57 to 1312.62 Kgm⁻³, 3.26% - 4.18%, 8.2% - 11.96%, 23.10% - 24.43%, 5.58% - 6.16%, 4.36% - 5.86%, 50.80% - 52.92%, 1168.02 – 1222.65 mg/100g., 4.21- 4.52mg/100g. And 9.86 – 10.57 mg/100gm respectively.

Keywords: Physiochemical character, Physical properties, chemical properties, average weight

Introduction

Sesame (*Sesame indicum*, L.) is one of the oldest among all oilseeds which is economically important and widely distributed overall the world. It is the member of Pedaliaceae family it is the seeds of tropical annual *sesamum indicum* it is originated fro dry bush savannah of tropical Africa and then speed to India and China. acc. to archeological records it was seen that In India it was known and used from more than 5000 years this crop is generally cultivated in tropical and temperate region the stored moisture soil with minimum irrigation or less rainfall give better yield. It is short day Plant. Since it grows in temperate region to required constant maximum temperature the minimum temperature required for its germination is up to 12^o c to 14^oc the normal temperature at which it snows range of growth with blossoms and ripeness of fruits is up to 25 to 32^o.

Sesame is considered as a major source for solving the problem of deficiency of micronutrients deficiencies in modern day nutrition. Its flowers are bell-shaped which is initially yellowish color after that it changes to bluish Purple color It has nutty sweet aroma with milky buttery taste. It is considered as a food material and edible oilseed.

Sesame seeds are a high Source of Carbohydrates, Proteins, fats, fibers and minerals also. It is rich source of oil from its half of the chemical component. It also gives same amount of the amino acids, monosaturated fatty acids, Polyunsaturated fatly acids. It also have ability antioxidant activity which show significant effect ifs for reducing the blood pressure, degeneration of Vessels and also useful for reducing chromic diseases.

One another benefits of these sesame seeds are that it is used in culinary purpose also and in traditional medicine.

This crop is generally grows in overall the world but the largest producer of this crop is India, China, Myanmar, Uganda and Nigeria about total world production of this crop more than Sixty percent grows from Asia region.

Sesame is mostly utilized whole seed in overall the world with its many components a perusal of the available literature Stated that there is a dearth of literature on its Physiochemical and mineral composition of its oilseed crop therefore the present study was aim to investigate to evaluate their physio-chemical Characteristics, mineral composition and other components.

Method of material

Experimental Site

The sample for studied were collected from local market of Vidharbha region the seeds of sesame cleaned manually for removing its dirt particles foreign matters. The damaged seeds were not useful for experimental purpose. After that the cleaned seeds were separated and break into small particle which was stored in Plastic bags.

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Phytochemical determination

By using the method of Trease and Evans and Harbone there was a Phytochemical determination flavonoides, alkaloids, tannin, phenols of the sesame seed.

Extraction of Oil

The Oil of Sesame seeds were extracted with hexane for 70 to 74 hrs at 20 to 22 °C in a Soxhlet apparatus. This was then filtrate same type of procedure is repeated upto three times. Fresh Solvent is used in every time for obtaining more result after that the extracted Oil was collected from this Solvent and evaporated up to 45 to 50 °C under a Vacuum then the extracted oil was dried by using anhydrous Sodium Sulphate

Physical properties of sesame**Seeds Weight**

For measuring the weight of sesame seeds electronic grain counter is used here weight of 2000 sesame seeds were measured in electronic balance.

True Density

A group of 200 seeds with an average weight were counted by using electronic grain counter depend on this the true density was evaluated by measuring the volume occupied by 200 seeds.

Colour

A color of sesame seeds were evaluated by visually.

Chemical properties of sesame**Percent of Moisture content**

For finding the total moisture content in sesame seed initially the seed sample were dried in oven up to 100⁰ for 5 to 6 hrs.

Crude Protein

By using the method of micro-Kjeldahl the Protein content was calculated.

Total Ash

This content of sesame seed were calculated by taking 0.3g of sample in a muffle furnace up to 10 to 12 hrs. At 500 to 550°C

Carbohydrate Percentage

The percentage of carbohydrate in sesame seed were calculated by using following formula with same amount of seed sample.

100 – (Moisture content percentage + crude protein ratio + percentage of fat + crude fiber + Percentage of ash)

Iron (Mg/100g)

For checking the Iron ratio in sesame seed UV-VIS spectrophotometer is used the level of iron is estimated from standard calibration curve which was prepared from analytical grade iron wire.

Calcium (Mg/100g)

The calcium level was evaluated by Absorption spectrophotometer at 423 nm with adding enough amount of La Solution by using standard Calibration curve the Calcium level estimated.

Zinc (Mg/100g)

The Zinc ratio was also calculated by using Absorption spectrophotometer at 215nm by using air-acetylene as a

source of Flame by using standard Calibration curve the level of Zinc was calculated which was prepared from ZnO Solution.

Result and discussion**Physical Properties**

Sr. No.	Physical Properties	Composition / Colour
1	Seed weight (2000)	3.86 – 4.40 g.
2	True density(Kgm ³)	1286.57 – 1312.62
3	Colour	White

Chemical Composition

Sr. No.	Composition	Percentage
1	Moisture	3.26 to 4.18
2	Crude Fiber	5.58 to 6.16
3	Total Ash	4.36 to 5.86
4	Fat	50.80 to 51.92
5	Proteins	23.10 to 24.43%
6	Carbohydrates	8.2 to 11.96%

Mineral Composition

Sr. No.	Composition	Percentage
1	Moisture	3.26 to 4.18
2	Crude Fiber	5.58 to 6.16
3	Total Ash	4.36 to 5.86

Conclusion

It is concluded that Sesame seeds are a good source of Protein, Minerals, Fiber, Crude fat,. But the more work is required for reducing the concentration of phytic acid for utilizing its nutrient because in current study it was estimated that the ratio of phytic acid was more as compared to other nutrients and it is also necessary that sesame seed should be Processed in various product for utilizing as a functional food in human nutrition.

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