Extraction and identification oils from some seeds of Umbelliferae and used it's as supported and preserved materials in meat patties

By
Sabreen Salam Nama Al-Athary

Summary

The current study included using seeds of parsley(*Petroslinum crispum*) , Celery (*Apium graveolens*), Coriander *(Coriandrum sativum)* and Dill (*Anethum graveolens*) were belonged to the family of Umbelliferae to extract oils from them, The seeds brought from the local markets of Basrah city .and after that the seeds were milled,dried and determinated chemical composition, which include (moisture, ash, protein, oil and totale carbohydrates) % of it's, As well as the caloric value of these seeds.

Oil was extracted from samples of milled and dried seeds using organic solvent extraction method, and used commercial pure oils for their comparison. then the fatty acids and the active compounds in the (commercial and laboratory) oils wrer analyzed using gas Chromotography spectaophotometer mass analysis.

Also a number of chemical quantitative chemical and physical tests of the (commercial and laboratory) oils were conducted which has been included (peroxide value, acid value, free fatty acids, refractive index, density, specific gravity, viscosity, melting point, cloud point, and pour point) and studied the sensory properties of the oils extracted (color, odor) and the situation at the room, refrigerator temperature and solubility in ethanol.

The studying investigated about the ability of (commercial and laboratory) oils to inhibitioned species of gram negative and positive bacteria.

Among the food applications of these oils in the field of conservation was preparation meat patties and added oils concentrations (0.1, 0.3, 0.5)% for their.While the control treatment was without adding, and then preserved in a refrigerator at a temperature of 4C° for periods (0, 3,7 , 10) days.

Chemical and physical tests of the meat patties were estimated which included (pH,water holding capacity, peroxide value, acid value and free fatty acids) and

microbilogical tests included (Total count bacteria, proteolytic bacteria and Lipolytic bacteria) and then analyzed the data were analyzed statistically and the obtained the following results were obtained:

1-Statistical data pointed thet there was a high significant differences at the level of ($P \leq 0.01$) in the moisture, ash, protein, oil, carbohydrates and caloric value of the powders prepared from coriander, celery, parsley and dill seeds. The highest percentage of moisture, ash, caloric value were in the coriander seeds, about 10.28 % , 22.25 % and 461.63 (kilocalories / 100 g) respectively, While the highest percentage of protein was on dill seeds about (40.25%),but the highest percentage of oil was in the celery seeds about (30.69%), Also the highest percentage of carbohydrates was in the parsley seeds about (35.2%). In other hand the lowest value of the moisture, oil and caloric value were in parsley seeds which were (8.42%) and 13.13% and 378.29 (kilocalories / 100 g) respectively, while the lowest value for ash and protein was in the celery seed powder, about 7.00% and 29.0% respectively, and a powder of coriander seeds contained the lower percentage of carbohydrates 15.20%.

2-The fatty acids and the effective compounds for (commercial and laboratory) oils were analyzed by gas chromotography spectaophotometer mass analysis, it was observed that the commercial parsley oil contains Palmitic acid and stearic acid, commercial oil from celery contains Oleic acid, Linoleic acid, Palmitic acid and Palmitolic acid, Stearic acid and Erucic acid, also the commercial coriander oil from containsd the Linoleic acid, Oleic acid, Palmitic acid, Stearic acid and Erucic acid, Two acids Octadecadieoic acid and Cis -11-eicosenoic acid on the rates (5.76 and 3.53)% were observed commercial dill oil and the results showed that the laboratory

oils contained ratios of Oleic acid and Palmitic acid and Stearic acid , as well as contain a non Common fatty acids .

3-The results pointed that the commercial oils did not have any active compouneds. while The active compounds in laboratory oils such as parsley, celery and dill oil were apoil, however celery and dill oils contained limonene, But the dill oil characted with carphon and coriander oil contained caryophyllene, As well as thier were other active compounds were founded in the laboratory oils, which played a major role in preservation.

4-The commercial parsley and celery oil was colorlness, While the color of commercial coriander and dill oil was yellow opening, Also the laboratory oils taken color ranging between green and yellow, and the commercial oils odorless, While the odor of laboratory oils distinctive, nice and grassy-like odor of spices. As well as the commercial oils and oils extracted on laboratory were liquid at temperature 22C°, while the strength seemed less liquid at a temperature of the refrigerator (4 C°), it was observed that all oils were dissolved in ethanol entirely.

5-The results of this study showed a high signieicant effect at the level of ($P \leq 0.01$) in peroxide values, acid valu, percentage of free fatty acids,viscosity and points of melting and pour between the types of coriander, celery, parsley and dill oils and between commercial and extracted laboratory oils, Also types of interaction between commercial oils and crude oils extracted on laboratory between them, and the results showed that the peroxide value, pH, acid value, percentage of free fatty acid was higher in crude oil than in commercial oils, While statistical data found no significant differences between the values of the, density, specific gravity, moisture and points of cloud for all the studied oils at ($P \leq 0.01$).

6-Commercial oils showed no inhibition ability against tested bacteria (gram negative and positive), But the laboratory oils proved a high effectiveness and the

results showed that there were high significant effect for these types of oils as well as thier were significant effect between the types of tested bacteria, Also types of interference between them on susceptibility inhibition to those oils.

7- Chemical, physical and microbilogical tests conducted for meat pattes treated with different concentrations of crude oil, and statistical analysis of the results proved that there was a high significant effect of all types of vegetable oils extracted on laboratory on all of the tests, Also the effect of the concentration of user oils, perieds of coolding, doubl interference between the type of oil and perieds of coolding, doubl interference between the type of oil and concentrations and between the type of oil and perieds of coolding on acid value , percentage of free fatty acids and water holding capacity,While there were high significant differences for concentrations of oils, perieds of coolding and doubl interference between the type of oil and perieds of coolding on the peroxide value, Also found that there was significat differences between the type of oil and pH values, while the doubl interferences and tri- interference effected on it, however all the factors that may have affected significant on logaritem of total count bacteria except the tri-interference ,The results indicated that the logartem of proteolytic bacteria and Lipolytic bactreia has been affected significantly different by concentrations and interaction between the concentrations of oils and perieds of coolding, But tri-interference did not affect on the preparation of this bacteria, while the effect of the perieds of cooling and interaction between the concentrations of oils and perieds of cooling was significant on logaritem of lipolytic bactreia only, but The interaction between the the type of oil and perieds of cooling was significant on the proteolytic bacteria only.