PRODUCTION OF PERFUME FROM PINEAPPLE, WATER MELON AND PAWPAW FRUIT EXTRACTS

[1]Ibrahim Isah Lakan & [2]Yahaya Sayyadi Mohammad
[1]Department of Chemistry,
IBB University, Lapai, Niger State, Nigeria
[2]PhD Candidate, Environmental Engineering,
Ahmadu Bello University, Zaria, Nigeria.
E-mail: yahsaymoh@yahoo.co.uk
Phone No: +234-803-574-4222Phone No:

Abstract: Perfume can be produced from many sources. Those sources that are readily available for man's use include; plants, barks, flowers, fruits and leaves. This research is on production of perfume from three fruits; pineapple, water melon and pawpaw. The extracts from the fruits were each subjected to refluxing for about 30mins. The solution were then treated with solvent extractor and separated by solvent extraction. About 30cm^3 of pineapple, water melon and pawpaw fruit extracts produced 16cm^3, 12.73cm^3 and 9.67cm^3 of perfume respectively. The extracts used were compared and it was found that the perfume produced from pineapple fruit gave a better yield and quality than that of water melon and pawpaw as the odour could be perceived even after washing the fabric. Therefore, it is concluded that perfume could be synthesized from pineapple, water melon and pawpaw fruit extracts and that small scale business may utilize its production for poverty eradication in the society.

Introduction

Perfumes are substances generally made by blending plant oil, selecting animal secretions and synthetic chemicals to produce a pleasant odour. During the early centuries, for a body to smell of a pleasant odour was noteworthy. Modern medicine has observed that in certain illnesses, the skin gives out a scent (Thompson, 1995).

Perfume is a mixture of fragrant essential oils, aroma compounds, fixative and solvent used to give the human body, animals and objects a pleasant smell or scent (Micheal, 2005). The world's first recorded chemist is considered to be a woman named Tapputi, a perfume maker who distilled flower, oils and calamus with other aromatics, then filtered and put them back in the still several times (Levey, 2005). The Persian chemist, Ibn Sina introduced the process of extracting oils from flowers by means of distillation; the procedures are the most commonly used today. He first experimented on rose flower until his discovery of liquid perfumes when mixtures of oils and herbs were crushed and blended (Burr, 2003).

Modern perfumes contain synthesized deodorants. Synthetic aromatics are often used as alternative sources of compounds that are not easily obtained from natural sources. Coumarin for example is a naturally occurring compound that can be inexpensively synthesized from terpenes (Turin, 2006). Orchid scents (salicylates) are usually not obtained directly from the plant itself but are instead synthetically created to match the fragrance compounds found in various orchids (Burr, 2004).

Sources of perfumes include plant, barks, flowers and blossom, fruits, leaves and twigs. Perfumes from fresh fruits such as apple and strawberry are produced synthetically because they do not yield the expected odour and have low fragrance (Patrick, 2006).

Pineapple fruit is a complex flower-head that forms around the stem. The top crown of the leaves contain a bud, which when mature indicate that the fruit is ready for harvest. The popularity of pineapple is due to its sweet-sour taste containing sugar, malic acid and citric acid. Water melon

fruit which is also called water melon is referred to by botanist as a pepo, a berry which has a thick and fleshy center (Dane, 2007). Pepos are derived from an inferior ovary and are characteristics of the cucurbitaceae (Daniel, 2000). Pawpaw fruits often occur as clusters of up to nine individual fruits, the ripe fruit is soft and thin skinned (Layne, 1996)

Materials and Methods

The fruits were collected from market outlet in Minna town. The following were the apparatus used in this study; Conical Flask (250cm^3), Measuring Cylinder (10cm^3 and 100cm^3)/Syringe, Beakers (50, 100, 200 and 500cm^3), Spatula (small), Funnels, Hot Plate and Stirrer (model: Jenway 1000), Analytical Weighing Balance, Washed Bottles, Bucket, Retort Stand with Clamp, Rubber Tubes, Flat Bottom Flask (100ml), Boiling and Test Tubes, Reflux Apparatus, Wire Gauze, Water and Sand Bath, Separator Funnel (100ml and 250ml). The reagents used are Pineapple Extract, Water Melon Extract, Pawpaw Extract, Ethanol, Conc. H_2SO_4 acid, Ice Block, Distilled Water, Ethoxyethane Solution, $NaHCO_3$ Solution, Na_2SO_4 Salt.

Production of Perfume from Pineapple Extract

30cm^3 of pineapple extract was added to 10cm^3 of ethanol with two drops of conc. H_2SO_4 and refluxed for 30mins on sand bath. The solution was then cooled in ice bath for 20mins. 3cm^3 of cold water and 3cm^3 of ethoxyethane were added and the mixture allowed to settle for 20mins. The aqueous layer was decanted and discarded. 1cm^3 of 5% $NaHCO_3$ was added and the mixture shaken gently until gas evolution ceased by extraction using separatory flask, and the process repeated until the solution became neutral to litmus paper. The organic layer was dried over Na_2SO_4 (anhydrous).

Production of Perfume from Water Melon Extract

30cm^3 of water melon extract was added to 10cm^3 of ethanol with two drops of conc. H_2SO_4 and refluxed for 30mins on sand bath. The solution was then cooled in ice bath for 20mins. 3cm^3 of cold water and 3cm^3 of ethoxyethane were added and allowed to settle for 20mins. The aqueous layer was decanted and discarded. 1cm^3 of 5% $NaHCO_3$ was added and shaken gently until gas evolution ceased by extraction using separatory flask, and the process repeated until the solution became neutral to litmus paper. The organic layer was dried over Na_2SO_4 (anhydrous).

Production of Perfume from Pawpaw Extract

30cm^3 of pawpaw extract was added to 10cm^3 of ethanol with two drops of conc. H_2SO_4 and refluxed for 30mins on sand bath. The solution was then cooled in ice bath for 20mins. 3cm^3 of cold water and 3cm^3 of ethoxyethane were added and allowed to settle for 20mins. The aqueous layer was decanted and discarded. 1cm^3 of 5% $NaHCO_3$ was added and shaken gently until gas evolution ceased by extraction using separatory flask, and the process repeated until the solution became neutral to litmus paper. The organic layer was dried over Na_2SO_4 (anhydrous).

Result and Discussion

The results of this experiment are given below:

Table 1: Result of pineapple extract

No. of Experiment	Extract (cm^3)	Ethanol (cm^3)	Conc. H_2SO_4 (cm^3)	Water (cm^3)	Ethoxy-Ethane (cm^3)	5% $NaHCO_3$	Vol. of Perfume produced
1	30	10	2	3	3	1	15.80
2	30	10	2	3	3	1	13.60
3	30	10	2	3	3	1	18.60
		Average volume of perfume produced					16.00

Table 2: Result of water melon extract

No. of Experiment	Extract (cm^3)	Ethanol (cm^3)	Conc. H_2SO_4 (cm^3)	Water (cm^3)	Ethoxy-Ethane (cm^3)	5% $NaHCO_3$	Vol. of Perfume produced
1	30	10	2	3	3	1	10.40
2	30	10	2	3	3	1	15.80
3	30	10	2	3	3	1	12.00
		Average volume of perfume produced					12.73

Table 3: Result of pawpaw extract

No. of Experiment	Extract (cm^3)	Ethanol (cm^3)	Conc. H_2SO_4 (cm^3)	Water (cm^3)	Ethoxy-Ethane (cm^3)	5% $NaHCO_3$	Vol. of Perfume produced
1	30	10	2	3	3	1	8.40
2	30	10	2	3	3	1	10.20
3	30	10	2	3	3	1	10.40
		Average volume of perfume produced					9.67

The results gave an average extract of $16cm^3$, $12.73cm^3$ and $9.67cm^3$ from pineapple, water melon and pawpaw respectively. The result shows that the quantities produced in terms of volume are in the order: pineapple > water melon > pawpaw. However, in terms of the qualiity of perfume synthesized from the fruits, the order is as follows: pineapple > pawpaw > water melon. This is supported by the odour of the respective extracts produced after monitoring the fabric used on each for about one week. In pineapple, ethylbutanoate was reported to be responsible for the odour unlike water melon and pawpaw that are low organic acid derivative origin.

Conclusion

From the experimental result obtained above, it is concluded that $30cm^3$ of each of the fruit extracts can produce more than $10cm^3$ of perfume. The extract from pineapple gave better perfume both in quantity and quality than that of water melon and pawpaw. While pawpaw extract gave better quality perfume than the water melon extract on fabrics, water melon extract gave larger quantity of perfume than the pawpaw extract. Therefore, perfume could be synthesized from pineapple, water melon and pawpaw fruit extracts and small scale business may utilize its production for poverty eradication in the society.

References

Burr, C. (2003). *The emperor of scent: A story of perfume, obsession and the last mystery of the senses.* Random House Publishing.

Burr, C. (2004). *The emperor of scent: A true story of perfume and obsession.* Random House Publishing.

Dane, F, & Liu, J. (2007). *Diversity and origin of cultivated watermelon.* Genetic Resources and Crop Evolution.

Daniel, L. (2000). *Domestification of plant in the old world.* Oxford University Press, 3rd Edition. P.193.

Layne, D. R. (1996). The pawpaw: A new fruit crop for kentucky and the United States. *Hot Science, 31,15-22.*

Levey, N, Mandel, H. & Korman, S. H. (2005). *Elevated plasma citrulline and arginine due to consumption of watermelon*. http://dx.doi.org

Michael, T. (2005). *Archaeological dig sniffs out world's oldest perfumery.* http://news.scotman.com

Patrick, S. (2006). *Perfume the story of a murderer*. Vintage Publishing.

Thompson, J., Kumar, P., Gupta, S. & Graham, V. M. (1995). *Inhalation challenge, effects of perfumes strips in patients with asthma.* http://www.ncbi.nim.nih.gov