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EVALUATIVE STUDIES ON ALCOHOL PRODUCTION BY BAKER'S YEAST USING FLOWER PETALS OF FEW SELECTED PLANTS

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ABSTRACT

Present research work carried out to analysis of the alcohol extracted from selected flowering plants such as Madhuca longifolia, Delonix regia, Rosa rubiginosa and Jasminum sambac produced by baker's yeast by using distillation method. Phytochemical investigation performed for trace Ester, Ceric ammonium nitrate, Acetyl chloride and Iodoform followed by UV spectrometric detection. Among these Madhuca longifolia flower petals shows significant scores.

Key words:

Alcohol, Delonix regia, Jasminum sambac Rosa rubiginosa, UV-Spectrometer

Introduction:

Alcohol is produced by fermentation. Fermentation process is conversion of sugar into ethanol. Sucrose containing materials could simplify the ethanol production process. In present investigation four different flowering plants are employed for production of alcohol by using baker's yeast by simple distillation process which further used for phytochemical analysis. Flowering plants such as Madhuca longifolia, Delonix regia, Rosa rubiginosa and Jasminum sambac were collected for research work in last session of winter. Madhuca longifolia (L.) J. F. Macbr. is commonly called Mahua or mohwa. It is medium-sized deciduous tree, native to the subtropics and hot tropics and which grows to a height of 16-20 meter. It growths intermittently in semi-evergreen woods, It has a short, thick trunk with a diameter of 80 cm. The crown has several branches and is circular with grey bark. The leaves are alternate and bunched at the end of branchlets (Singh et.al, 2005). The leaf blade is simple, oblong-shaped, rigid and thick. Young leaves are pinkish or reddish-brown. Flowers are borne on green or pink, furry bunches, each bunch consisting of 12 fragrant cream-coloured flowers.

Delonix regia, usually called flamboyant or royal poinciana, is a temperate tree that is inherent to Madagascar but has been broadly planted around the world in tropical and semi-tropical areas. It is evergreen in hot, dry conditions but deciduous in cooler temperatures. It has enormous scarlet flowers that stand out against the green leafy background. A rarer variety has smaller, orange flowers (Yadav and Sardesai, 2002). It grows to an average height of approximately 14-17m in the presence of sunlight and healthy soil.

Rosa rubiginosa L.is native to most of Europe with the exclusion of the extreme north and it is cultivated as a garden ornamental, particularly as a hedging plant in the temperate regions (Dole and Wilkins, 2005). Flowers (20-50 mm across) are borne in loose bunches at the tips of the twigs. They have five pink, pinkish-white or white petals (8-25 mm long), several stamens, and five narrow sepals that are frequently protected in sticky (i.e. glandular) hairs. Flowering arises typically during spring and early summer (Khosh-Khui and Silva, 2006). Jasminum sambac (L.) Aiton is an evergreen vine or shrub getting up to 0.5 to 3

m. It is a species of jasmine originated to tropical Asia. Flowers are extremely fragrant which bloom for the period of the year and are created in groups of 3 to 12 organized at the tips of branches (Leonhardt and Teves, 2002).

Materials and Methods:

Flowers of plants like Madhuca longifolia, Delonix regia, Rosa rubiginosa and Jasminum sambac were collected in last session of winter. Petals were washed with distilled water and dried in shade. 10gm of a shade dried flower from each plant were dissolved in 1% baker's yeast solution for 5-6 days to fermentation process in separate beakers. Further it transferred into 500 ml round bottom conical flask for control distillation at 40-50 degree Celsius. Production of alcohol is collected and used to trace for Ester, Ceric ammonium nitrate, Acetyl chloride and Iodoform followed by UV spectrometric detection.

Conclusion:

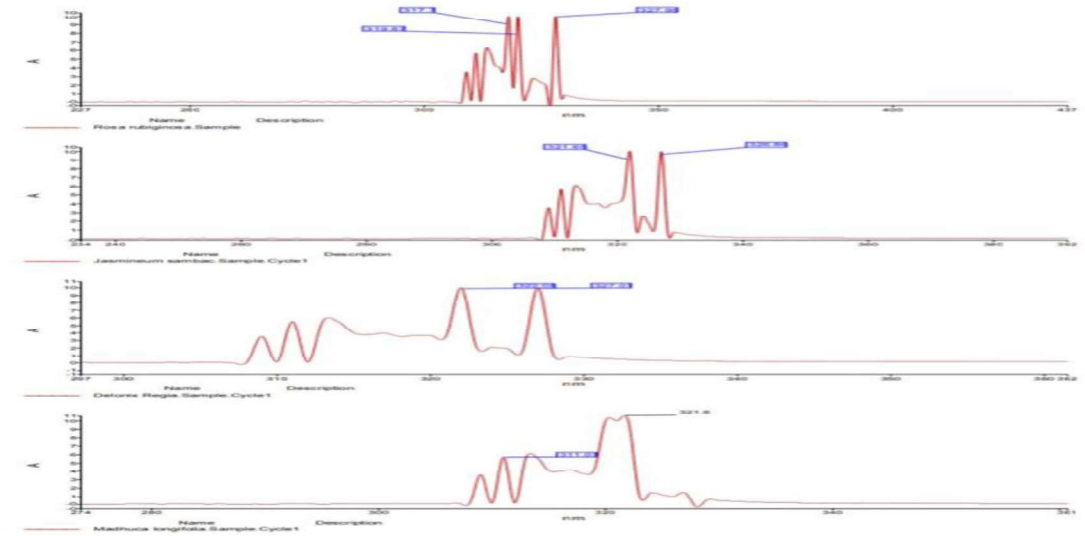
Petals of selected flower produced alcohol shown various test significantly positive in more or less manner. Madhuca longifolia would show more percentage of alcohol among all plants and strongly positive in Ester, Ceric ammonium nitrate, Acetyl chloride and Iodoform test. Sinha et al., (2017) conclude that Mahua (Madhuca longifolia) is a highly nutritious tree with lots of properties like antibacterial, anticancer, hepatoprotective, anti-hyperglycemic, analgesic activities. Utilization of mahua flower as a substrate for the production of ethanol will become a great economic advantage in the Indian context (Benerji et al., 2010). Scientific protocols used for the qualitative analysis of alcohol. Following table indicates significant trace values.

(Note… +++ more amount, ++ moderate amount, + Less amount and - absent)

Sr. No	**Test/ plant**	***Madhuca longifolia***	***Delonix regia***	***Rosa rubiginosa***	***Jasminum sambac***
1	Ester test	+++	+	+	++
2	Ceric Ammonium Nitrate test	++	-	+	+
3	Acetyl chloride test	+++	-	+	-
4	Iodoform test	++	+	+	+
5	Extracted obtained alcohol	9.1ml	5.3ml	2.7ml	1.1ml

UV- spectrophotometry:

Alcohol solvent is commonly used in many activities. This multipurpose solvent is antiseptic, which permanently inactivates fungal and bacterial cells and terminates enveloped viruses. UV-spectrophotometric technique widely used to analysed the quality of alcohol and detect various peak showed by compound. It is helpful to detect the trace element and its amount. Gas chromatography (GC) is a diagnostic method for volatile and semi-volatile compounds. Numerous ethanol analyses have done with GC since impurities in ethanol are basically volatile (Campo et al., 2007, Rodrigues et al., 2008). Alcohol is ubiquitous in nature. It is the end product of alcoholic fermentation and a key component of alcoholic beverages even though it constitutes an unwanted constituent of non-alcoholic and low-alcoholic beverages. Wavelength of 330 is found as maximum wavelength with absorbance maximum range in less or more amount in all the samples.



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