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EFFECT OF PRE-DISTILLATION TREATMENTS OF ROSE FLOWER ON OIL YIELD AND CHEMICAL COMPOSITION

AJAI KUMAR

Correspondence to :
AJAI KUMAR
Department
Quality Assessment
Laboratory, Fragrance &
Flavour Development Centre,
P.O. Makrand Nagar,
KANNAUJ (U.P.) INDIA

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ABSTRACT

An experiment was conducted to optimize the pre-distillation treatments of rose flower in order to find out the percentage of oil recovery and chemical composition of oil obtained as a result of different treatments. The results clearly indicated that when fresh flowers were hydro-distilled without giving any pre-distillation treatment, the oil recovery after 3 hrs. of distillation was 0.058% while the recovery of oil after 12 hrs., 24 hrs. and 48 hrs. soaking in water was 0.056%, 0.054% and 0.046% respectively. Rose flowers were also subjected to shade drying and keeping in refrigerator but the percentage of oil recovery was lower than soaking treatment and without soaking (fresh flower distillation). GC and GC-MS analysis of the oil led to the identification of 29 compounds, but the five major compounds identified were citronellol (13.51-45.91%), nerol (0.51-19.80%), geraniol (0.12-36.38%), nonadecane (4.39-23.02%) and henicosane (2.39-18.09%). The rest of the compounds were found in minor or trace quantities. The oil yield in fresh flower was maximum. .

Key words: *Rosa damascena*, Noorjahan, Rosaceae, Essential oil composition.

Rosa damascena Mill commonly known as Bussorah or Falsi gulab in Hindi belonging to the family Rosaceae is an important ornamental and high rich perfumery plant found widely grown in India[2].

Rose is basically a temperate plant, indigenous to Europe and Middle East countries especially, Iran, Afghanistan and Turkey. The main rose growing areas in the India are Aligarh and Ghazipur in Uttar Pradesh and Haldi Ghati in Rajasthan. *Rosa damascena* is a perennial, erect, climbing shrub with a life span upto 50 years. The plant reaches a height of 2.5-3.0 metre.

Rose oil is one of the oldest and most valuable perfumery raw materials. The rose, often referred to as the "Queen" of the flowers, is used for purposes of decoration during festivals and for personal adornment. The flowers are strung into garlands and offered in temples during workshop.

The bulk of Damask Rose Flowers, amounting roughly to 60-70% of total production in the county is used for the production of rose water. Smaller quantities are consumed in preparing attars, gulkand and hair oils.

Studies on composition of the *Rosa damascena* oil of the variety Noorjahan has been reported[5]. In their studies the main components of the oil have been identified as citronellol (20.8%), nerol (11.8%), geraniol (25.3%) and nonadecane (8.5%).

GC-MS composition of the Turkish rose oils has been analysed[8]. In their studies they have reported citronellol+ nerol (28.07-61.97%), geraniol + nerol (2.54-14.72%) and nonadecane+ nonadecene (12.49-19.26%) main components. Supercritical fluid extraction (SFE) and steam distillation (SD) have been identified the major components of 2-phenyl ethanol (50 and10.4%), citronellol (11.4 and 26.1 %), 2-phenyl ethyl acetate (7.5 and 14.8%) and n-nonadecane (7.8 and 10%).

Kahol *et al.*, 1983 studied on the improved technology for production of rose oil. The main constituents were citronellol (23.9%), nerol (12.4%), geraniol (34.9%) and phenyl ethyl alcohol (7.4%).

GC/MS analysis of the Turkish rose oil revealed the presence of 85 components of which 68 have been identified making up 96% the total components detected[3]. The compounds were found in different years –citronellol (26.74-43.54%), nerol (5.26-10.58%) and geraniol (10.18-25.83%).

Combination of GC to identify phenyl ethyl alcohol (37.93%), citronellol (12.64 %), geraniol (15.81%) and nerol (4.06%) major constituents in Egyptian Oil of Rose[7].

Dimov and Tsoutsoulova, 1988, examined the chemical composition of a number of samples of rose oil. The mean quantitative data used for the components selected for use in the mathematical model were citronellol (22.50%), geraniol (22.20%).