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Development of HPTLC Qualitative Finger Printing Profile of Almond Oil in Marketed Herbal Cream

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ABSTRACT

The almond oil is lightweight, golden-brown oil which is extracted from sweet almond nuts. Almond oil is derived form almond fruits; is a type of nut oil and used as natural remedy in many of the external and internal diseases. It is saponifies easily and yields a mild soap with good lather. It can be used as a large percentage of the fats or as oil added at trace. Oil extracted from almond kernels is non-drying, the oil is edible, but is used largely in the manufacture of certain pharmaceuticals like creams, lotions, lotion bars, hair oils, balms, scrubs, massage oils and soaps. Sweet almond oil is a great emollient for softening and conditioning the skin.It is a rich sorce of antioxidants A rapid and simple high performance thin layer chromatographic method is developed for the qualitative finger printing standardization of marketed herbal cream containing almond oil extracted from almonds (*Prunus amygdalus var. dulcus*). The separation was achieved by using Benzene: Methanol (7.5:1.5 v/v) as mobile phase and aluminium backed silica coated TLC plates F_{254} as stationary phase; the developed plates were dried at 60ºC after development. The separated bands on TLC plates were scanned over the wavelength of 560nm using tungsten as a lamp and in absorbance/reflectance mode after derivatization with fresh anisaldehyde sulfuric acid reagent dry the plates at 120.

KEY WORDS: Almond cream, Almonds, Almond oil, evaluation, TLC, finger printing, qualitative, densitometry, Polyherbal formulation, cream.

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INTRODUCTION:

Almond oil[3-5] is an excellent moisturizer and lubricant, which prevents the skin from drying and keeps you free from chapped [1] and peeling skin. For centuries, almond oil had been used, as a soothing remedy for skin allergies, and to treat minor cuts and wounds. Another common use of almond oil is in massages because it is an excellent skin lubricant. Its properties make it popular with massage therapists' worldwide. It does not have any greasy effect and will take a little bit of time before it is absorbed by the skin. Using it for a massage makes your body feel relaxed and your skin looking healthy. It will definitely relieve the stress you have from a hard day's work. The newly pressed sweet almond oil is a mitigator of pain and all manner of aches [2]; therefore it is good in calming of head, brain, pleurisy and colic.

Almond Cream contains the almond oil which acts as a beautifying agent and it is useful for all skin types and textures it absorbs in to the skin. Almond oil moisturize dehydrate skin. It nourishes and revitalizes, protects, soothes and calms the skin.

The cream contains almond oil, which acts as highly active natural humectants, emollient, revitalizing, beautifying and cleansing agent for all skin types and textures. The cream is indicated as excellent moisturizer and lubricant and prevents the skin from drying and keeps the skin from chapped and peeled. It helps skin to maintain optimum moisture levels.

Chemical fingerprinting has been demonstrated to be a powerful technique for the quality control of herbal medicines. A chemical fingerprint is a unique pattern that indicates the presence of multiple chemical markers within a sample.

No HPTLC method has been reported for the evaluation and identification of *Prunus amygdalus var. dulcus* oils in creams as per the literature survey. Therefore the objective of this investigation was to develop a simple, economical, selective, reliable and precise HPTLC technique for the identification of almond oil form cream base formulation. The proposed method was validated using (ICH) guideline.

MATERIAL AND METHODS

Procurement of materials:

Almond oil was procured from Ghaziabad aromatics Ghaziabad, India. The marketed almond cream was taken under study.

Chemical, Equipments and Instrument:

All chemicals and reagents of analytical grade were purchased from Merck chemical, Mumbai. India. HPTLC system used for analysis was Camag HPTLC system. The sample were spotted in the form of

bands using a Camag 100microlite sample syringe (Hamilton, Bondouz, Switzerland) syringe on Precoated silica gel aluminium plate $60F_{254}$ (20X10) with 250µm thickness;(Merck") using a Camag Linomat 5 sample applicator (Switzerland).The linear ascending development was carried out in 20cmX 10cm twin trough chamber. TLC plates were dried on Camag TLC plate heater III. Densitometric scanning was performed on Camag TLC scanner 3 in the reflectance-absorbance mode and the system operated by Camag WINCATS software.

SAMPLE PREPARATION:

Preparation of reference sample (Almond oil):

Take 1.0ml of almond oil in 10.0ml volumetric flask add acetone to dissolve and make up the volume to 10.0ml with the same solvent.

Preparation of test cream sample (Almond oil containing cream):

Take 2.0gm of cream in 30.0ml acetone and allow it to shake on rotary shaker for about 1.0hr and filter; evaporate the filtrate on water bath till it becomes 5.0ml. Use this for further development.

DEVELOPMENT OF THE OPTIMUM MOBILE PHASE:

In order to develop a optimum mobile phase for the separation of all the constituents the test, the prepared solutions were spotted on TLC plates and by using neat solvents like toluene, methanol, chloroform, dichloromethane, benzene, ethyl acetate, acetone, acetonitrile etc. without chamber saturation and the chromatograms were allowed to develop. Based on the results of these initial chromatograms binary and ternary mixtures of solvents were tried to achieve optimum resolution between constituents of the almond oil and other excipients of the formulation. After several trials of different solvent mixture; Benzene: Methanol (7.5: 1.5) v/v was chosen as the mobile phase for analysis then the plate was derivatized with anisaldehyde sulphuric acid solution and dried at 110°C for 5minute. The mobile phase Benzene: Methanol (7.5:1.5) v/v ratio gave good resolution and well defined spots were obtained when the chamber was saturated with the mobile phase for 10minute at room temperature.

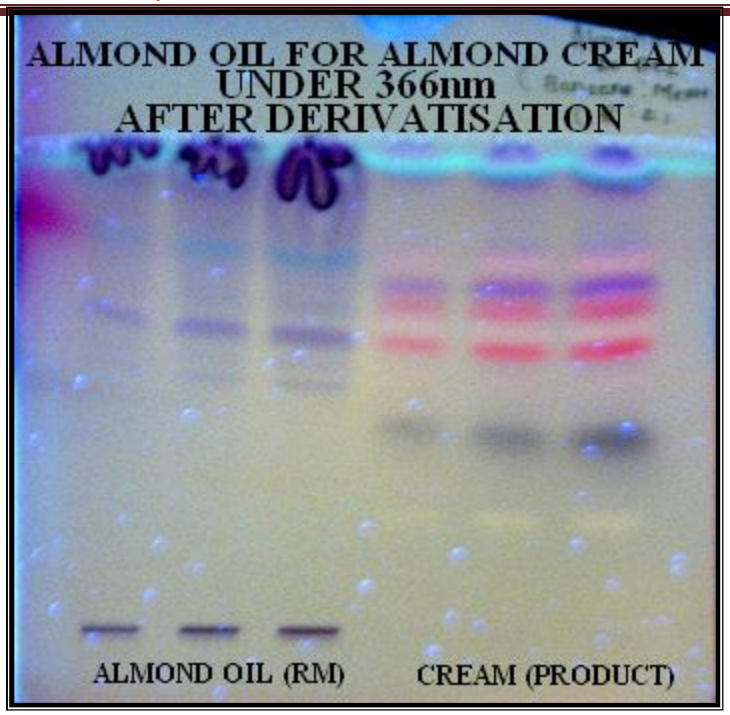

Figure 1: Shows the spots and chromatographic run at 366nm after derivatization.

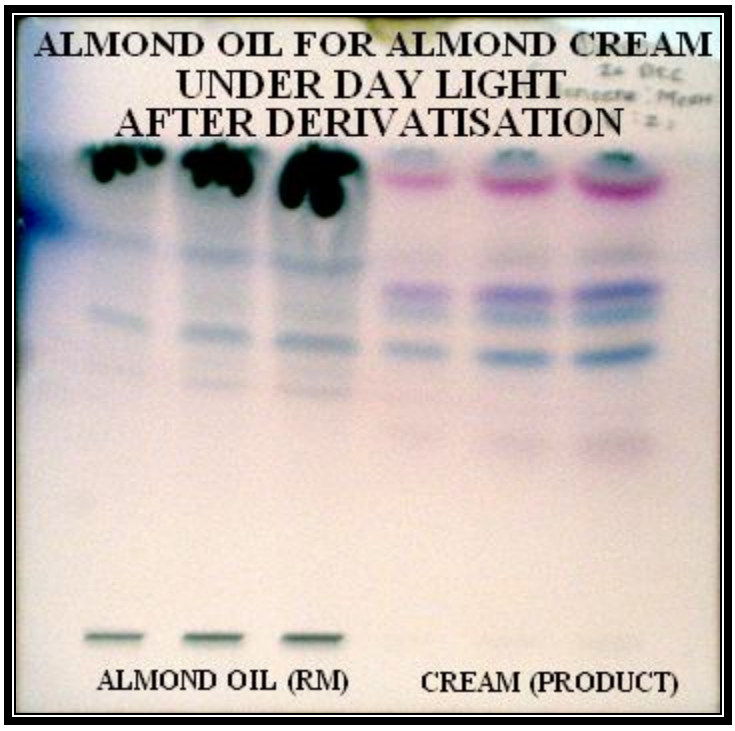

Figure 2: Shows the spots and chromatographic run at day light after derivatization.

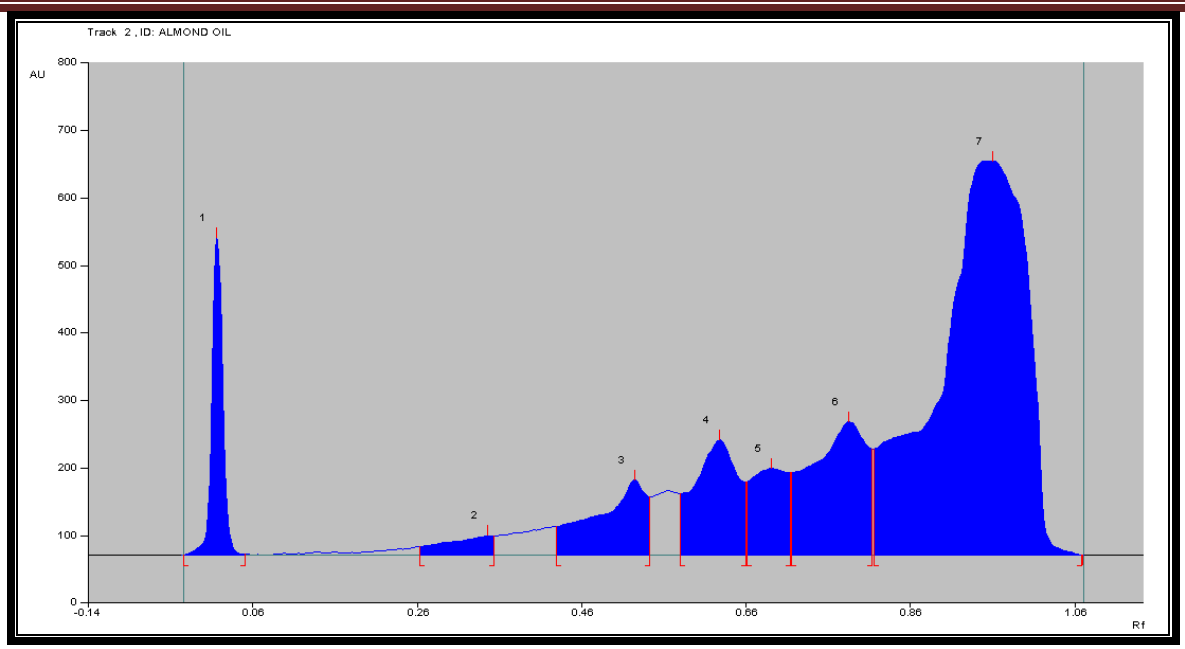

Figure 3: represents peaks of Almond oil in the HPTLC densitogram.

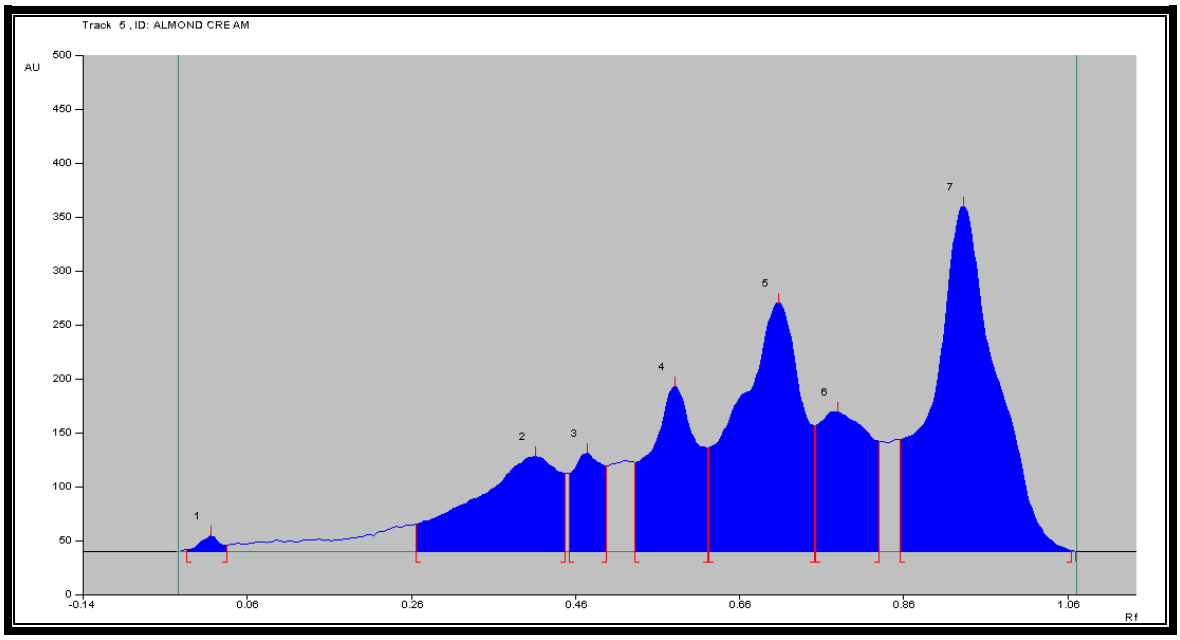

Figure 4: represents peaks of almond oil in Almond cream a Polyherbal cosmeceutical formulation.

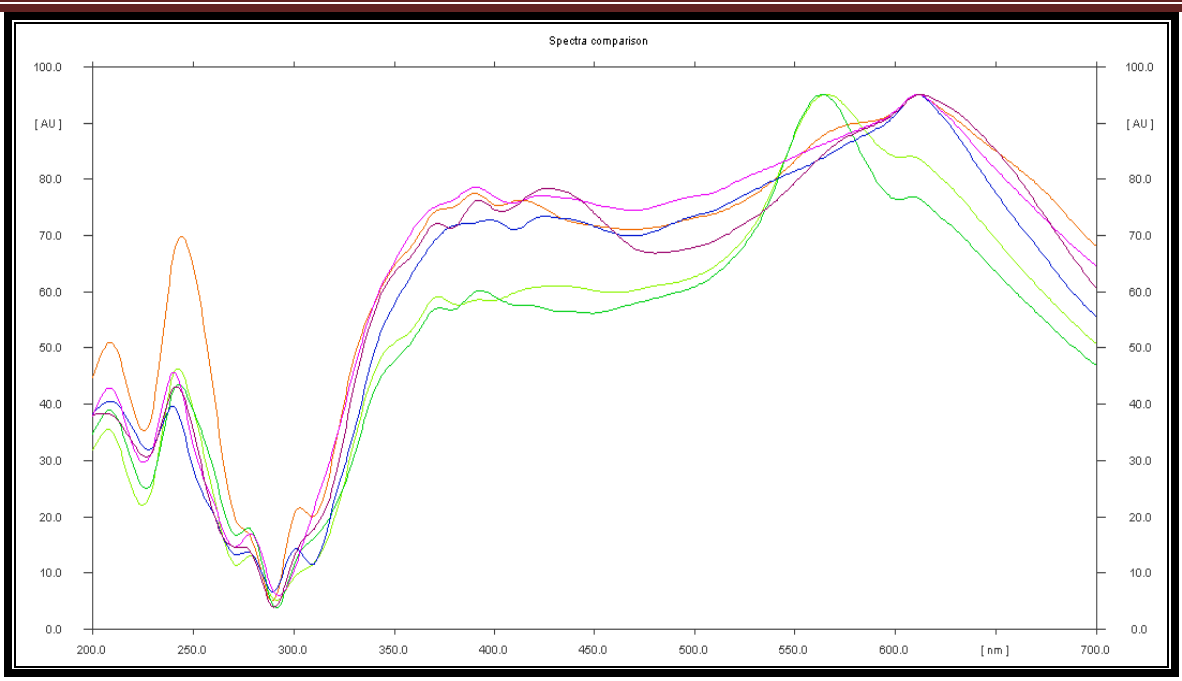

Figure 5: Shows overlay spectra of assigning peaks from all the tracks at Rf=0.69 which confirms the presence of same compound.

Qualitative estimation:

Chromatographic profile of Almond oil and Almond cream formulation by HPTLC method are shown in table 1 and 2 respectively.

Table 1:- Shows chromatographic profile of Almond oil:

Crude drug	Solvent system	Detection after derivatization	Rf values of corresponding spots	
			366nm	Day light
Almond oil	Benzene: Methanol (7.5: 1.5) v/v	Under 366nm and day light.	0.50, 0.57, 0.66, 0.72.	0.48, 0.57, 0.63, 0.70, 0.77, 0.88.

Table 2:- Shows chromatographic profile of Almond oil containing Cream:

Crude drug	Solvent system	Detection after derivatization	Rf values of corresponding spots	
			366nm	Day light
Almond cream	Benzene: Methanol (7.5: 1.5) v/v	Under 366nm and day light.	0.50, 0.58, 0.64, 0.71.	0.47, 0.55, 0.62, 0.68, 0.79, 0.90.

RESULT AND DISCUSSION:

Figure 1 shows the spots and chromatographic run at 366nm while figure 2 shows the spots and chromatographic run at day light after derivatization. Figure: 3 represents the densitometric peaks of Almond oil after scanning, while figure: 4 represent the densitometric peaks of almond cream. The peak pattern obtained in spectral scan data confirms that the almond oil is present in the marketed herbal cream containing almond oil (Figure 5).

The simple accurate, specific and precise HPTLC method was developed for almond oil RM and the same for cream base formulation containing almond oil. In qualitative estimation of almond oil Rf values was found to be 0.50, 0.57, 0.66, 0.72 and in cream base formulation containing almond oil 0.50, 0.58, 0.64, 0.71 at 366nm after derivatization in Uv light.

CONCLUSION:

The developed HPTLC method for the qualitative evaluation of Almond oil and cream base formulation of almond oil was found to be specific, economical, reliable and precise and can be used as a qualitative evaluation tool for Almond oil in different Polyherbal formulations.

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