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## Comparative analysis of *Zingiber officinalis* lotion in different ratio with quality control

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**Abstract**

**Background:** To compare the *Zingiber officinalis* lotion prepared by *Zingiber officinalis* mother tincture in aqueous base at different drug and vehicle ratio under the quality assessment by various tools.

**Methodology:** In this process preparing the Lotion from prepared *Zingiber officinalis*- Q, which was prepared as per Old Hahnemannian method of preparation of mother tincture. Samples were prepared by measuring the quantity first, mixing, filling and finally labelling. Samples were divided into three groups; such as standard group, sample group and control group. All these samples were passed under the UV-Visible spectrophotometer and FTIR (Fourier-transform infrared spectroscopy).

**Conclusion:** The Formulation of *Zingiber officinalis* lotion in (1:9) drug and vehicle ratio gives better results in analysis done by UV- visible spectrophotometer and FTIR (Fourier transform infrared spectroscopy) as compare to other drug and vehicle ratio i.e. (1:1) and (1:5).

**Keywords:** *Zingiber officinalis*, FTIR, lotion, UV

**Introduction**

Applying body lotion is one of only a handful of exceptional economical ways that individuals can spoil themselves. Shower body cream seals dampness into the skin to forestall drying, while body care moisturizer mellow harsh elbows and heels, alongside other dry region of the skin. A quality body skin lotion can make all the difference for textured, dried out skin that feels harsh and looks ugly, and hand body moisturizer functions admirably on all fours, however can be applied all around the body. As a huge number of clients will concur, body lotion gives many advantages to individuals who make time to utilize it consistently.

**Uses of lotion****Re-hydrate dried skin**

Individuals who work in cruel environments frequently apply body cream consistently, maybe even day to day. Skin that is dried or dried from wind, cold, or intensity can be difficult to treat with standard beauty care products. Certain individuals have delicate skin. Regardless of which kind of environment they live in, their skin can become dry and aggravated effectively, here and there even from indoor intensity. Quality body cream, applied after each shower or shower, can assist with fixing dampness somewhere down in the skin to keep it hydrated and graceful. It may not be an ill-conceived notion to keep a packaged of your #1 scented body salve close by for an after-shower application.

**Recharge additional dry or harsh spots on the skin**

Regardless of whether your typical skin type is sleek or typical, you could have unpleasant regions on your body, as around the elbows or knees that could profit from skin cream applications after a shower or at sleep time. With ordinary use, a recharging salve can ease harsh skin and make it as smooth and luxurious as the remainder of your body.

**Smooth calluses**

In the event that you are on your feet a considerable amount, you might have grown harsh calluses that are difficult and unattractive. A wet body salve can make these regions flexible and assist you with eliminating the dead skin more straightforward than if you endeavoured it without cream. In the event that your calluses seem stained, enlarged, or have red streaks running from them, check with your primary care physician as opposed to attempting to eliminate them yourself.

**Feel and smell lovely**

Individuals love the vibe of velvety lotion on their drained appendages or middle. Partake in the loosening up vibe of moisturizer applied to your feet, legs, or arms. Specialty stores, retail chains, and gift shops convey various fragrances of body salve to browse. There are as numerous cream types as you have saturating needs, so exploit the abundance of fragrances and surfaces to track down one that suits your character and needs [1].

**Zingiber officinalis Linn**

This plant is ordinarily known as humdinger (Family: Zingiberaceae). The rhizome contains around 2-3% rejuvenating oils, including the mono- and sesquiterpenes zingibers, zingiberol, and  $\beta$ -eudemol. Different constituents incorporate lipophilic impactful constituents, for example, gingerol and furthermore starch (half), adhesive, fats, sugar, crude fiber (3-8%), minerals (approx. 5%), nutrients (niacin, vitamin A), proteins and amino acids, diterpenes, gingesulfonic corrosive, and cinnamic corrosive (Blaschek *et al.* 1998). Ginger is fundamentally utilized as a piece, in candy-coated structure as sweet shop and for making ginger tea. The new rhizome is utilized in customary Chinese medication for colds, migraine also, regurgitating (Chang and in any case, 1986). In conventional Islamic medication, the new rhizome is utilized for heaving, hack, also, fart and the dried rhizome for stomach hurt, lumbago, the runs, and assimilation issues.

**Active ingredient of Zingiber officinalis Linn**

Various dynamic fixings are available in ginger including terpenes and oleoresin which called ginger oil. Ginger additionally comprises unpredictable oils roughly 1% to 3% and non-unstable impactful parts oleoresin [5]. The major recognized parts from terpene are sesquiterpene hydrocarbons and phenolic intensifies which are gingerol and shogaol [6] and lipophilic rhizome extricates, yielded possibly dynamic gingerols, which can be changed over completely to shogaols, zingerone, and paradol [7].

The main embodiment of the present invention is prepared and compare the *Zingiber officinalis* lotion prepared by *Zingiber officinalis* mother tincture (as per old Hahnemannian method of drug preparation) in aqueous base at different drug and vehicle ratio. Thereafter, the quality assessment by various tools i.e., UV- Visible Spectrophotometer, FTIR (Fourier Transform Infrared Spectroscopy).

**Materials and Methodology**

There are following steps given as

**Formulation prepared by**

1. *Zingiber officinalis*-Q
2. Distilled water

**Site of study**

Centre of Research and Development of Parul University CR4D

**Investigational tool**

UV- Visible spectrophotometer (Double beam)  
FTIR (Fourier transform Infrared spectroscopy)

**Drug and Vehicle Ratio**

Drug and vehicle ratio is (1:1)  
Drug and vehicle ratio is (1:5)  
Drug and vehicle ratio is (1:9)

**Procedure**

- a. For preparation of *Zingiber officinalis* mother tincture following steps should be taken; such as Old Hahnemannian method used

**Class- III**

Drug vehicle ratio- 1:2

Drug Vehicle strength- 1/6

After preparation filtration done by filter paper of 125 mm in diameter.

- b. For Preparation of lotion following steps should be taken; such as

1. Measurement
2. Mixing
3. Filling
4. Labelling

**Measurement**

- Preparation of *Zingiber officinalis* Q

Prepared As per old Hahnemannian method (1:2)

- Preparation of *Zingiber officinalis* lotion (1:9)

As per Pharmacopoeia

Prepared *Zingiber officinalis* Q (1 ml)

Distilled water 9ml

- Preparation of *Zingiber officinalis* lotion (1:5)

Prepared *Zingiber officinalis* Q (2ml)

Distilled water 10 ml

- Preparation of *Zingiber officinalis* lotion (1:1)

Prepared *Zingiber officinalis* Q (5ml)

Distilled water 5ml

**Mixing**

After preparation mixing done by the glass rod.

**Filling**

Sample should be filled in the hard glass bottles, which is clean and sterile first.

**Labelling**

Paste label on the body of hard glass bottle, which contains Drug name, manufacturer date, Indications, quantity of drug and vehicle, overall drug and vehicle ratio.

**Precaution**

Samples should be away from the heat, sunlight, dust, strong smelling bottles, kept in a cool and dark place.

**Results**

While sample passing under UV- visible spectrophotometer, maximum absorption of *Zingiber officinalis*- Q is 0.988 at 457 nm, *Zingiber officinalis* lotion (1:9) is 0.995 at 387 nm and *Zingiber officinalis* lotion (1:5) is 0.993 at 437.00 nm, *Zingiber officinalis* lotion (1:1) is 1.00 at 700 nm, ethanol is 0.954 at 206 nm. On other hand, In FTIR the Maximum transmission of *Zingiber officinalis*-Q at the wavelength of 3319.54 nm, Maximum transmission of *Zingiber officinalis* lotion (1:9) at the wavelength of 3416.78 nm, whereas the Maximum transmission of *Zingiber officinalis* lotion (1:5) at the wavelength of 3275.65 nm, Maximum transmission of *Zingiber officinalis* lotion (1:1) at the wavelength of 3365.51 nm, Maximum transmission of ethanol at the wavelength of 3326.19 nm.

UV visible spectrophotometer

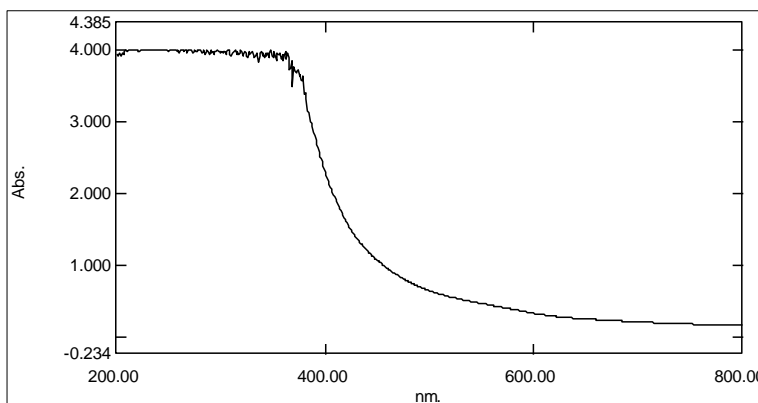


Fig 1: Absorbance of *Zingiber officinalis*-Q

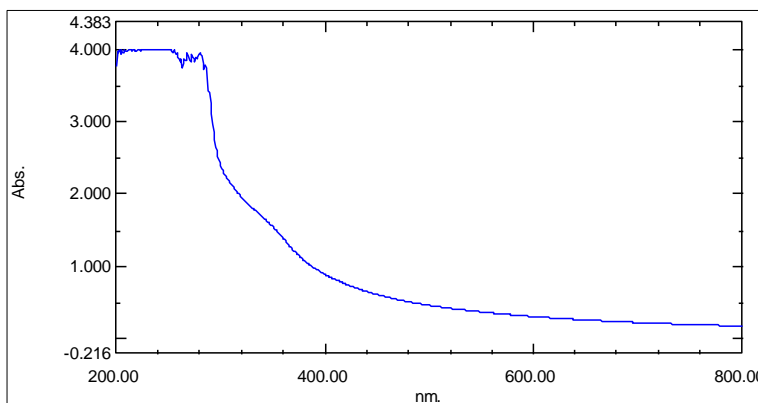


Fig 2: Absorbance of *Zingiber officinalis* lotion (1:9)

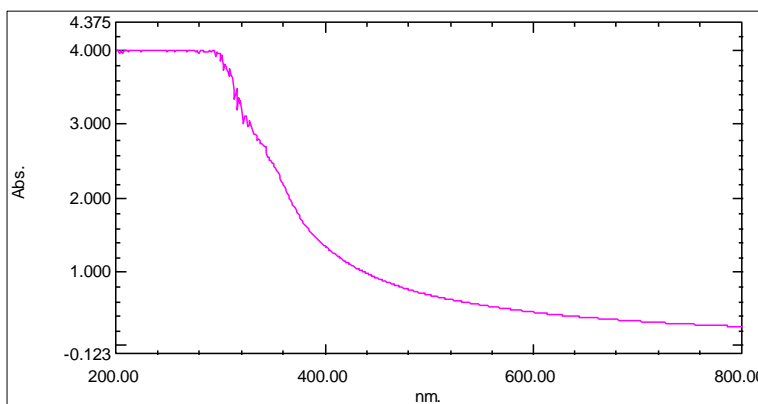


Fig 3: Absorbance of *Zingiber officinalis* lotion (1:5)

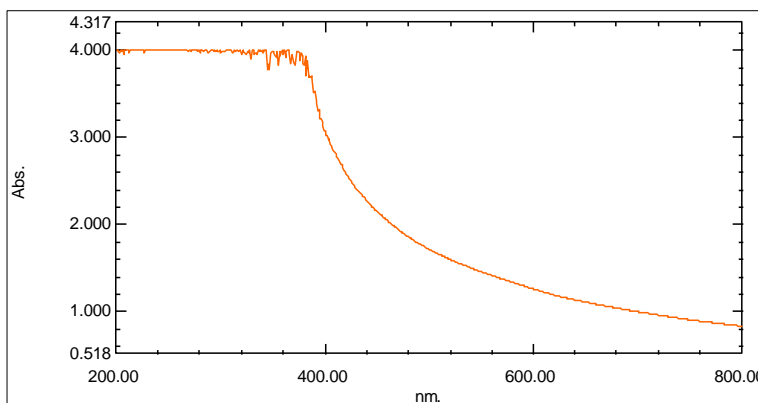
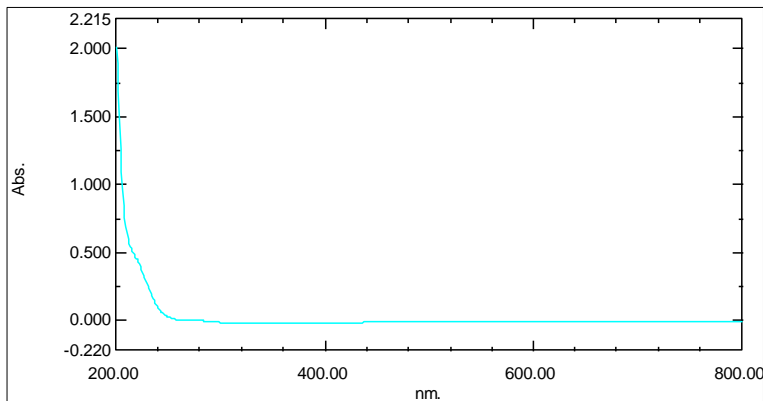
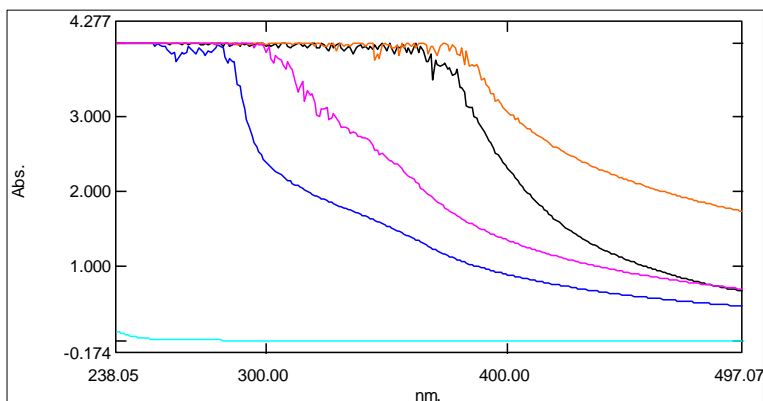


Fig 4: Absorbance of *Zingiber officinalis* lotion (1:1)

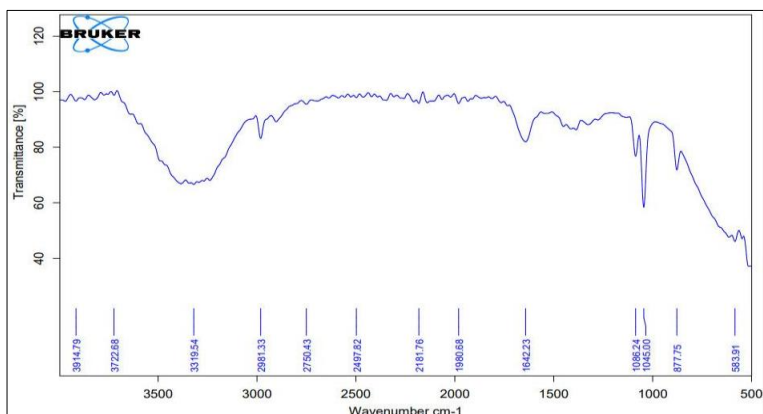


**Fig 5:** Ethanol (Control)

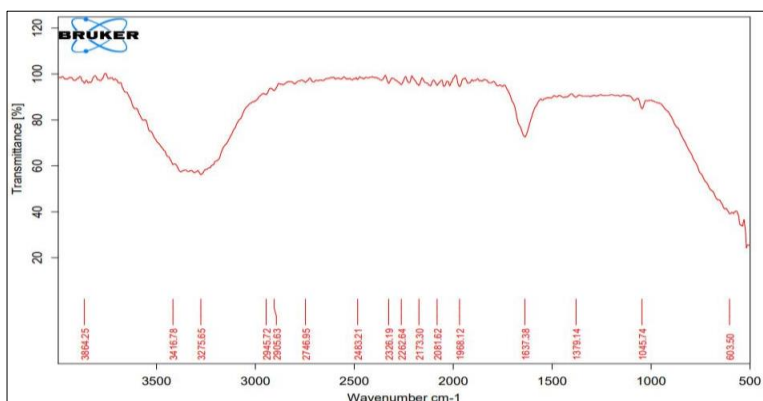


**Fig 6:** Compare absorbance of *Zingiber officinalis*-Q, *Zingiber officinalis* lotion (1:9), *Zingiber officinalis* lotion (1:5), *Zingiber officinalis* lotion (1:1), Ethanol

**FTIR Analysis (Fourier transform infrared spectroscopy)**



**Fig 7:** Maximum Transmission of *Zingiber officinalis*-Q



**Fig 8:** Maximum Transmission of *Zingiber officinalis* lotion (1:9)

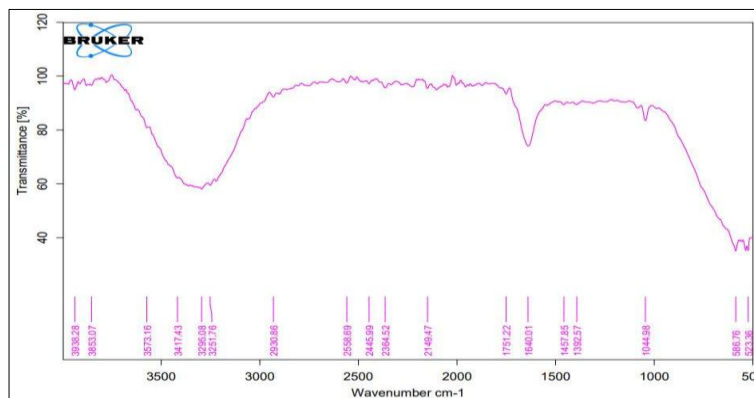


Fig 9: Maximum Transmission of *Zingiber officinalis* lotion (1:5)

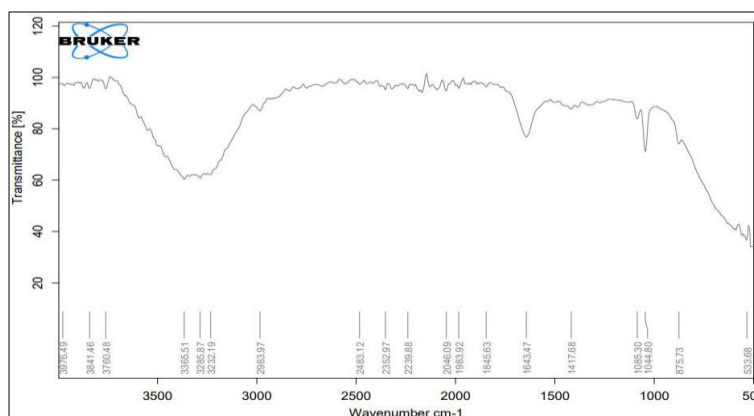


Fig 10: Maximum Transmission of *Zingiber officinalis* lotion (1:1)

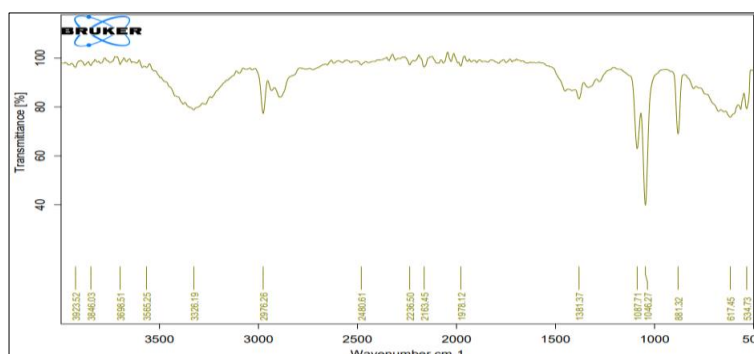


Fig 11: Maximum Transmission of ethanol

## Conclusion

The Formulation of *Zingiber officinalis* lotion in (1:9) drug and vehicle ratio gives better results in analysis done by UV-visible spectrophotometer and FTIR (Fourier transform infrared spectroscopy) as compare to other drug and vehicle ratio i.e. (1:1) and (1:5).

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