

**DEVELOPMENT AND EVALUATION OF CREAM CONTAIN  
POLYFRUIT EXTRACT: AS SKIN TONER AND ANTIAGEING**

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Article Received on  
29 October 2017,

Revised on 19 Nov. 2017,  
Accepted on 09 Dec. 2017

DOI: 10.20959/wjpr201717-10435

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**ABSTRACT**

The present study was to develop and evaluate the polyfruit extract cream comprising extracts of fruits such as Papaya, Tomato, Cucumber, Pumpkin extract and Honey, Rose oil, Almond oil which act as skin toner and anti-aging. Water in oil (W/O) polyfruit extract cream was formulated by incorporating concentrations of wool fat, hard paraffin, cetosterol alcohol and white soft paraffin. The evaluations of formulation was done on different parameters like pH, color, appearance, consistency, viscosity, Spreadability and stability were examined. Formulations showed good Spreadability, good consistency, homogeneity, appearance, pH, Spreadability, no evidence of phase separation and ease of removal. The formulation show no redness, edema, inflammation and irritation during irritancy studies. These formulations are safe to use for skin and increase tone of skin

and give extra nourishing effect and also reduce ageing sign.

**KEYWORDS:** Polyfuit cream, Polyfruit extract, Almond oil, Evaluation parameter, skin tone.

**INTRODUCTION**

Skin aging is influenced by many factors including ultraviolet radiation (UV), excess alcohol consumption, tobacco abuse and environmental pollution. Combined, these factors lead to cumulative deterioration in skin appearance and function.<sup>[1,2]</sup> According to Soyun et al., 2009, aging of the skin is characterized by irregular pigmentation, increased wrinkling, loss of elasticity, dryness and roughness. The use of natural compounds in skin protection


especially topical application of antioxidants indicates their popularity in decreasing the effect of aging on the skin.<sup>[3,4]</sup> The skin is the body's first line of defense for external exposure. The signs of ageing are most visible in the skin. Although, ageing skin is not a threat to a person, it can have a detrimental effect on the psychology of a person.<sup>[5]</sup> Much of the premature ageing occurs as a direct or indirect result of skin's interaction with the environment. Exposure to sunlight is a recognized as a major factor in the etiology of the progressive unwanted changes in the skin appearance.<sup>[6]</sup> Photochemoprotective agents are capable of preventing the adverse effects of ultraviolet radiation on the skin, which are caused by excessive generation of reactive oxygen species.<sup>[7]</sup> This cream contain polyfruit extract of fruits such as Papaya, Tomato, Cucumber, Pumpkin extract and Honey, Rose oil, Almond oil which act as skin toner and anti-aging.




**Objective:** The objective of this research work was to develop and evaluate the polyfruit extract cream comprising extracts of fruits such as Papaya, Tomato, Cucumber, Pumpkin extract and Honey, Rose oil, Almond oil which act as skin toner and anti-aging. The cream also acts as a emollient on skin in day to day life by preventing removal of skin moisture. It also possesses nutritional value which provided required nutrients to the skin and increase skin tone.




## MATERIALS AND METHODS

All crude drugs were collected from fruit shop, Alephata, Junner, Pune. All drugs information mention in table 1.

**Table 1: Drug information.**

Sr. No.	Fruit Extract	Medicinal Importance	Figure
1	<b>Papaya</b> <i>Carica papaya L.</i> <i>Caricaceae</i>	It treats acne and prevents future breakouts as well. Again, the proteolytic enzyme papain makes papaya an effective treatment for acne the enzyme papain in papaya exfoliates dead skin cells to cure skin impurities. Papaya peel can help reduce the signs of aging. Some claim it to be as effective as Retin-A. The peel contains enzymes that remove dead cells from the surface of the skin. This helps remove wrinkles and age spots. Lightening of your skin	

		complexion. It contains natural bleaching properties. In addition, its cleansing properties help clear the skin of impurities. The vitamin C in it also helps protect skin cells against sun damage.	
2	<b>Pumpkin</b> <i>Cucurbita pepo L.</i> <i>Curcubiteae</i>	It is packed with fruit enzymes and alpha hydroxy acids (AHAs), which increase cell turnover, to brighten and smooth the skin. Pumpkin contains antioxidant Vitamin A and Vitamin C to help soften and soothe the skin and boost collagen production to prevent the signs of aging. Pumpkin is for all skin types, particularly environmentally damaged or sensitive skin.	
3	<b>Cucumber</b> <i>Cucumis sativus</i> <i>L. Cucurbitaceae</i>	The flesh of the cucumber is mostly water, but also contains ascorbic acid (vitamin C) and caffeic acid, both of which help soothe skin irritations and reduce swelling—these acids prevent water retention. Cucumber has loads of water content to keep skin hydrated. The cooling properties along with antioxidants and silica present in cucumbers help rejuvenate the skin.	
4	<b>Tomatoes</b> <i>Solanum lycopersicum</i> <i>L. Solanaceae</i>	Tomato exhibits natural bleaching property that lightens your skin tone. Vitamin C content in tomato helps for collagen production, fights cellular damage by preventing free radicals. Lycopene (a powerful antioxidant) is the major compound in tomatoes which protects the skin from harmful ultraviolet (UV) rays, fights against free radicals to delay the aging of the skin, and protects the skin from cancer attacks. Other than lycopene, tomatoes are enriched with vitamins A & C along with some astringent and cooling properties.	

5	<b>Honey</b> <i>Apis mellifica</i> <i>Apidae</i>	Light humectants and nutrients used as thickening agent to give body to facial masks, creams and lotions.	
6	<b>Rose oil</b> <i>Rosa canina L.</i> <i>Rosaceae</i>	Rose Geranium has been used as an extremely potent repellent. Rose petal is rich with the anti-bacterial properties along with the positive effects of Vitamin K, C and B. It also have good amount of antioxidants.	
7	<b>Almond Seed</b> <i>Prunus dulcis</i> <i>(Mill.) D. A.</i> <i>Webb. Rosaceae</i>	Almond oil is a brilliant moisturizer as it contains olein glyceride linoleic acid. It works to prevent acne, blackheads, as well as arid and prickly skin. It also provides vitamin E needed for healthy skin. It helps to bring a glow to your skin and also acts as a mild disinfectant for wounds. Age-defying properties, reduce dark circles, clear skin from impurities.	

### Preparation of Extracts by successive solvent extraction

All fruit powder were taken in a paper pouch and packed in to soxhlet apparatus and then the extraction is done by using about 500 ml of ethanol as solvent for 6 continuous hours at 50 – 70<sup>0</sup> C. Then the crude extract was evaporated until it gets solidified. The extract was evaporated under vacuum dryer, weighed.<sup>[8]</sup>

**Table 2: Formulation of Cream.**

Sr. No.	Ingredient	Quantity
1	Crude Extract	0.3 gm
2	Wool Fat	0.5 gm
3	Hard Paraffin	0.5 gm
4	Cetosterol Alcohol	0.5 gm
5	White Soft Paraffin	8.5 gm
6	Almond oil	1 ml
7	Honey	1 gm
8	Rose oil	0.1ml



**Fig.1: Polyfruit Formulation.**

### **Preparation Procedure**

Ingredients (except crude extract) are taken into a china dish and melted on a water bath. Immediately transferred into mortar, with the help of piston, contents were triturated until a homogeneous semi solid mass was formed. Then the crude extract was mixed with it after melting. Then the contents were melted thoroughly and stirred vigorously. Then it was cooled. After the cooling, the ointment was formed.<sup>[9]</sup>

### **Evaluation of Polyfruit Cream**

Preliminary evaluation of formulation at different concentrations was carried out as follows.

**pH:** The pH meter was calibrated and measured the pH by placing in the beaker containing 20mg of the cream.<sup>[9]</sup>

### **Spreadability Test**

500mg of the cream was sandwiched between 2 slides. A weight of 100gm was placed on upper slide. The weight was removed and extra formulation was scrapped off. The lower slide was fixed on board of apparatus and upper slide was fixed with non-flexible string on which 20g load was applied. Time taken by upper slide to slip off was noted down.<sup>[10]</sup>

### **Homogeneity**

The test was done by physical touch with hands.

**Appearance**

The appearance of the cream was found by observing its color, opacity, etc.

**After Feel**

After applying the herbal cream on skin the properties like emollient nature, slipperiness and the amount of cream left after applying to the skin was checked.

**Smear Type**

The test was conducted after the application of ointment on the skin the smear formed was oily or aqueous in nature.

**Removal**

The removal of the ointment applied on skin was done by washing under tap water with minimal force to remove the cream.

**Patch Test**

About 1-3gm of material to be tested was placed on a piece of fabric or funnel and applied to the sensitive part of the skin e.g. skin behind ears. The cosmetic to be tested was applied to an area of 1sq.m.of the skin. Control patches (of similar cosmetic of known brand) were also applied. The site of patch is inspected after 24 hrs. As there was no reaction the test was repeated three times. As no reaction was observed on third application, the person may be taken as not hypersensitive.<sup>[11]</sup>

**Irritancy Test**

The cream was applied on left hand dorsal side surface of 1sq.cm and observed in equal intervals upto 24hrs for irritancy, redness and edema.<sup>[12]</sup>

**Accelerated Stability Studies**

Accelerated stability studies were performed on all the formulations by maintaining at room temperature for 20 days with constant time interval. During the stability studies the parameters like homogeneity, viscosity, physical changes, pH and type of smear were studied.<sup>[13]</sup>

**Extrudability**

A simple method was adopted for this study. The formulations were filled in the collapsible tubes after the ointments were set in the container. The extrudability of the different ointment

formulations was determined in terms of weight in grams required to extrude a 0.5 cm of ribbon of ointment in 10 second.<sup>[14]</sup>

### Diffusion study

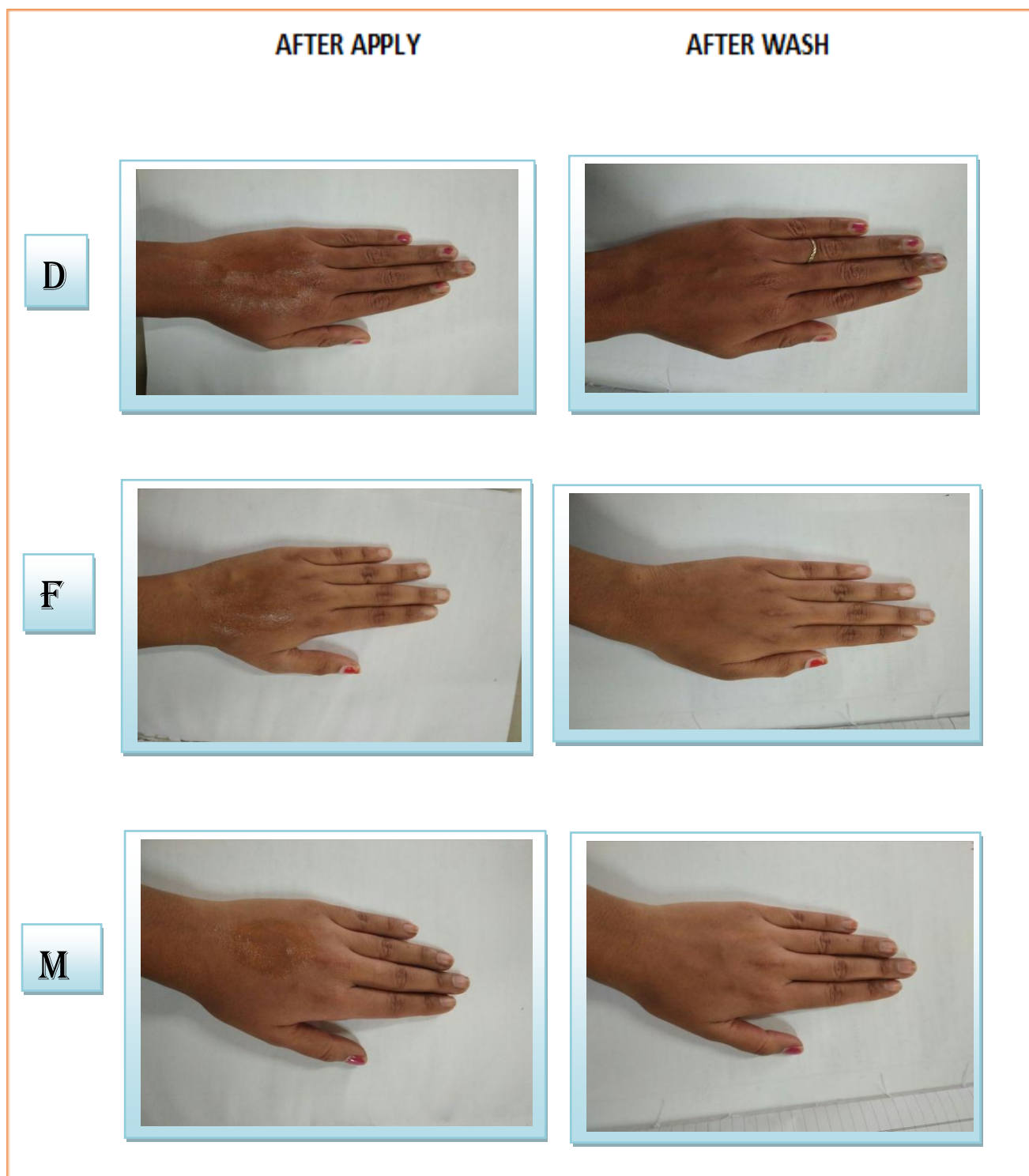
The diffusion study was carried out by preparing agar nutrient medium of any Concentration. It was poured into petri dish. A hole bored at the center and ointment was placed in it. The time taken for the ointment to get diffused was noted.<sup>[15]</sup>

## RESULTS AND DISCUSSIONS

The polyfruit cream was prepared by using w/o emulsion method using mixture of alcoholic extract of Papaya, Tomato, Cucumber, Pumpkin extract and Honey, Rose oil, Almond oil which act as skin toner and anti-aging. The extract were used and formulated and pass all evaluation test and all result were mention in table 3.

**Table 3: Evaluation Parameter.**

Sr. No.	Parameters	Observation
1	Color	Yellowish
2	Odor	Pleasant
3	pH	6.8
4	Spreadability	Uniform
5	Washability	Washable
6	Consistency	Good
7	Grittiness	No gritty
8	Skin Tone Properties	Observed
9	Homogeneity By visual By Touch	Homogeneous Smooth Consistent
10	Patch Test	Not hypersensitive
11	Irritancy test	No redness and edema
12	Accelerated stability studies	Stable
13	Type of Smear	Slightly greasy
14	Extrudability	Easily extrudable
15	Diffusion study	Passed



**Fig.2: Patch Test for three different skin type [D- Dark, F- Fair, M- Medium].**

## CONCLUSION

Water in oil (W/O) polyfruit extract cream was formulated by incorporating concentrations of wool fat, hard paraffin, cetosterol alcohol and white soft paraffin. Formulations showed good Spreadability, good consistency, homogeneity, appearance, pH, Spreadability, no evidence of phase separation and ease of removal. The formulation show no redness, edema,



inflammation and irritation during irritancy studies. These formulations are safe to use for skin and increase tone of skin and give extra nourishing effect and also reduce ageing sign. Formulation to be prepared by simple methods and less equipment are required. Water in oil emulsion-based cream was formulated using natural ingredients and was evaluated. By combining all these ingredients it act as anti-aging creams as well as with skin nourishing and toning properties. The ingredients mixed can produce synergistic effect of the other and gave best result on skin with no any side effect and it is beneficial in winter to lock the moisture.

### ACKNOWLEDGEMENT

We thank our Principal Dr. S.L. Jadhav, Dr. D.D.Gaikwad, Mr. D. Gunjal, Mr. Pingle Sir, Dhawde Sir and Mr. P. S. Rahinj VJSM's Vishal Institute of Pharmaceutical Education And Research, Ale, Pune for providing all the facilities to conduct this work.

### CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interests.

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