



Original Research Article

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## Study on Papaya Antioxidants and Solid Soap Formulations based on Crude Papain

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### ABSTRACT

It leads to result in negative effect on air quality in high urban area especially due to uncontrolled free radical formation released to air. Consequently this condition might cause skin diseases that are contacts to those radicals mainly the human skin it causes. To overcome this problem there is one way to keep the skin in health to manufacture a soap ingredient as a radical scavenger it's a formulation that provides a new function. A plant proteolytic enzyme papain which is found naturally in papaya (*Carica papaya*) it is a cysteine protease enzyme is manufactured from the latex of raw papaya fruits. They are known as polypeptides which are made of amino acids and have a functional ability to break down organic molecules it is a proteolytic enzyme. In this research work to enhance the human skin health it can be used as soap, a developed active ingredient which is made of crude papain enzyme is a solid soap formulation with antioxidant origin from fresh papaya. This study tested the benefits by the addition of crude papain enzymes that will be safe for the skin; they aim to produce a solid soap formula who meets the standard of SNI 1996. The result shows that formula IV that meets the standard SNI 1996, it is a formula soap and other formulas indicated by the value of IC50 is 13,657 ppm which have highest antioxidant activity. For negative control (with enzyme) has value of percentage dirt removal higher when compared soap with positive control (without enzymes), it is measured about 32% by mass substrate after washed, and measured absorbance of wash water substrate is 19%.

#### Keywords

Papain, Cysteine protease, Radicals, Solid soap, Antioxidant

#### Article Info

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### Introduction

More than just a delicious fruit, papaya is a source of nutrients with a number of health benefits. According to a 2013 paper, the many benefits of papaya can be attributed to the high content of vitamins A, B, C. Its proteolytic enzymes, such as papain and chymopapain also have antibacterial, antifungal, and antiviral properties. Papayas

have gained popularity as a natural home treatment, and for their use in skin and hair products. Their benefits vary and are summarized in the table below

Skin benefits	Hair benefits
Wrinkle reduction	Conditioner
Acne control	Hair growth
Melisma treatment	Dandruff prevention

Pawpaw in fact growing natural manner in many humid and subtropic region. Pawpaw consists thiol, protease active enzymes, in soap which they are present to crash determined fibrinin the epidermis, in consequence desquamate deceased epidermal cell. Papaia related castile are in the retail or sell as pawpaw castile can be brought about whiten benefits due to their alchemical contented. Pawpaw castile soap well liked for skin whiten property generally it consists components such as water, acetate and pawpaw causes the epidermis to lose coloration (pigmentation).

The foremost cause at the back of the pawpaw or latex it consists enzyme papain build epidermis (skin) smooth and brighter. Systematic utilization about pawpaw castile (soap) can affect lenient epidermis (skin) brighten.

Enzyme carries out all chemically brightening the skin but no later it exfoliates off outermost surface of skin achingly can posses sunburnt or tan. Likewise, when papaia is utilized in a castile, it dissolute the deceased dermis on the exterior part of your face, makes it functional as an desquamate whatever disclose your healthy epidermal cells.

The berry carries greater amount of fibers, supplements, nutriments C (51.2 mg/100g), carotene, antiophthalmic factors acts as precursors including provitamin A (232.3 ug/100g), and cryptoxanthol (594.3 ug/100g), as well magnestic element (19.2-32.7 mg/100g), it have been said by Wall. Berry it also carrys papaia it is crucial part of pawpaw (dried material) and it extensively applicable to mallet. Over the year, papaia and endomysium, others have demonstrated a number of aid related to pharmamedical and medical sake, such as removing fibrin from blood type of wounds and action towards curing or management of puffines or lump.

Due to its protease equatorial pawpaw cures burn injury of affected people.

Anomaly of papaia, and endonuclease, as well as leukopenia & chymopoiesis, are allowed to make easier for cleansing of wounds, develop or contribute to make better the quality of marks left on tissue spots which are black. Due to diverse varieties in pawpaw fruit there is difference.

Although *pawpaw* safe to eat and it is tasteful beery, it adapted due to its curative sake and action towards treating for lot of diseases or ailment, differ from gastrointestinal disorderliness to respiratory disorder and gonorrhoea, venereal disease. Frequently, the herb is cinerated together with verdant ancillary in sequence to exclude cur. The frond also has been used in broth or fermentation (infusion) to heal or cure tape worms, pin worms (internal parasites).

Together thought out the period it is utilized as antihelmintic or deworming, the entire fruit of *pawpaw* have been heated and utilized it as a drink in order to cure lesion. In Madagascar, A tea made of from *pawpaw* leaves has also been used in sequence to cure lesions, abscess, intestinal issues, also common intestinal pain. In the Africa region of Congolose, extract or a concentrated liquor made from riped seeds it is said to be a very efficacious in curing of diarrhoea. The fruit have been used as a well liked hepatoportal emissary. On the assumption of cynical and lcerus or chlamydia, unripe immature pawpaw is eaten and also utilized in a concoction or extract. Review described that leaves of pawpaw has much vitamin capacity and carotenes due to their high contents of vitamin B (in leaves), vitamin C,E(in fruits), and carotenoids. Oyoyoede tried out that the synthetic or enzymatic profile of immature mash of pawpaw it also described the pawpaw was excess in carbohydrates, starch, sugars

and also fats (42.28% starch, 15.5% sugar) but low levels of fat.

Recent time Oloyede et al recommended that comic inhibits oxidation effects of ethanoate proportion of immature fruit pawpaw mash in vermin. Quercetol, angelicin are outlying from hydroxylmethane latex and later from the liquid-latex from immature pawpaw fruit through Fraz von soxhlet extractor. They farther examined the in laboratory antioxidative properties of fruit pawpaw in vermin and outcome ended that notable grow in the pursuit of glutamine reduction. Consequently it was put forth that immature pawpaw is used for controlling illness thoroughgoing they frequently cause mellitus, Haemoglobin S disease and cardiac arrest.

From the outside as a protection of the body and skin has various problems that include chronic diseases like cancer, dry skin, premature aging. It may cause due to air pollution results shows exposure ultraviolet also less care for cleanliness and in many free radicals. To maintain healthy skin, soap should be used regularly it is the treatment soaps are derived from animal fats or vegetable oils which potassium or sodium salts of fatty acids. Use of natural ingredients along with soap provides maximum nutrition on skin whereas use of chemicals provides side effects on skin.

An enzyme papain is having higher activity in breakdown of proteins to amino acids as well as peptides which is present in papaya's soap. For the manufacture of skin cleanser as an active ingredient papain can be used because it dissolves the dead cells that attached to skin and are difficult to get rid of in physical way. Including skin and the body needs antioxidants they are substances for neutralizing free radicals also prevent damage caused by free radicals.

In this study we can make solid soap that contain antioxidants as a crude enzyme papain from the latex of papaya and crude form of papaya fruit.

### **Papaya soap**

Papaya soap is a natural, gentle soap that's safe to use on different parts of the body, including the face. A normal bar of soap also cleans and removes dirt. But it may be too harsh for the skin, stripping it of natural oils. Some soaps contain synthetic detergents and other ingredients that will not only wash away dirt, but also your skin's natural moisture. This can exacerbate skin conditions like acne, psoriasis, and rosacea, increasing dryness and itchiness. Papaya soap, on the other hand, is made from natural ingredients. It contains the enzyme papain, which breaks down protein. This enzyme promotes healthy digestion, but it can also act as an anti-inflammatory.

### **Benefits of papaya soap**

Papaya has nutrients to promote healthier skin. Papaya soap is rich in vitamin C, an antioxidant that can reduce irregular pigmentation and reduce irregular pigmentation and stimulate collagen production. The soap also contains vitamin A, another important nutrient for the skin. It promotes the production of new skin cells, and may help reduce dark spots, blemishes, and scars.

### **Uses for papaya soap**

Over-the-counter cleansing bars don't also improve the skin, but a natural skin-friendly product like papaya soap might. Different uses for papaya soap include:

### **Exfoliation**

The papain enzyme in papaya soap can exfoliate the skin and give it a healthier

appearance. Exfoliation removes deceased dermis from the exterior part of your skin. While it is true that the skin naturally renews itself, exfoliating with papaya soap on a regular basis can leave the skin brighter and smoother. It can also even out skin tone.

Pawpaw castile act as the latex at slow speed it desquamate the upper layer of dermis, excluding deceased part and impede pigment. Following continual, it brought smooth skin and brighter complexion.

Pawpaw related castile has exfoliation property which are necessary in do away with deceased epidermal cells and revitalize flaking and deceased skin. Already stated that it is due to pawpaw castile, papain enzyme whatever it speed up breaking down of skin protein with water.

Unlike other whiten castile (soaps), pawpaw castile (soap) does not depart residues on surface of the skin.

### **Acne treatment**

Apart from epidermis whiten, pawpaw castile could be utilized to cure black heads. It is effectual in curing blackheads. For the face or further black heads susceptible body parts. One of main affect of blackheads is propensity for deceased epidermal cells to clog the vesicles opening. Surfeit sebum oil for deceased epidermal cells which amass in the hair (hair follicles) and can affects spots(pimple) to form. In-depthalchemical desquamate issue will have a solution.

Pawpaw castile could dim(fade) the appearance of marks (scars) over time. Since enzyme has been utilized to detach the exterior surface of skin from lesions and sore. It slightly brightens blemish and acne. If you have once-prone skin, papaya soap may help clear blemishes and reduce break outs. As a protein-dissolving enzyme, papain effectively

removes damaged keratin. Keratin is a main protein on the skin, yet a build up can cause the formation of small bumps. The exfoliating power of papaya soap also prevents dead skin cells from clogging pores, which can also reduce acne.

### **Insect sting pain reliever**

Rubbing papaya soap over an insect bite or wound can help relieve pain, itching, swelling, and redness. This is because papain can reduce inflammation and promote wound healing. Also, some insect venom contains peptides, which are the building blocks of proteins. Papain can break down these proteins, relieving skin irritation.

### **Stain remover**

Papaya soap doesn't only cleanse the face and body. It can also act as a stain remover. Papain-based soaps have the ability to "eat" at protein, easily removing grass stains, egg stains, and other protein-based stains.

### **Skin lightener**

Papaya soap can help smooth out your skin complexion. Hyperpigmentation is darkening or discoloration of the skin. Since papaya soap promotes the removal of dead skin cells, the soap may gradually reduce the appearance of dark patches, lightening your skin. It's also believed that papaya soap helps curb excessive melanin production. However, this claim doesn't appear to be scientifically backed with research.

### **Side effects and precautions**

Even though papaya soap is natural, it may not be safe for everyone. Before using papaya soap for the first time, test the soap on a small patch of skin. Discontinue use if you have signs of an allergic reaction, such as bumps, swelling, itching, or redness.

### **Preparation of solid soap**

Papaya fruit contain crude papain enzyme, raw materials like coconut oil, NaOH, Citric acid, glycerine, water are used for solid soap, and to the lye solution oil mixed gently in a stainless steel pot in warm ambient temperature it was kept, frequently stirred for about 5 to 10 minutes. Until solution change into solid for 24 hours it is kept in ambient temperature in which added other ingredients while stirring the mixture and later the solution into moulds it was poured.

### **Antioxidant Activity**

Anova, the addition papaya on solid soap, was no significantly affected to antioxidant activity. The active substance from papaya fruit such as alpha-tocopherol, ascorbic acid, beta carotene, flavonoids, vitamin B1, and niacin will provide antioxidant properties to the sample soap. By four mechanisms, as antioxidants the polyphenols acts, such as damaging free radicals, preventing the formation of free radicals through hydrogen bonding, deactivate singlet oxygen which acts as a free radical in the body, and to be bonded with metals. As flavonoid and phenolic acids act as raw materials and also acts as solvent methanol and they will dissolutes in it and is identified with antiradical activity as the main phenolic fraction.

### **Cleaning Activity**

Comparison of control positive soap (without enzymes) with control negative (with enzyme) is done by dirt removal test. From the Fabric fibers (substrate) Removal of dirt and impurities is the lifting process and the interaction between surfactant, dirt, and fabric surface it including. Result of the washing solution and according to the Journal International of Research in Pharmacy and Science Department of Quality Assurance,

B.N College of Pharmacy based on maximum absorbance it was chosen wavelength 270nm, maximum absorption at wavelengths of 270-280nm papaya solution consists.

In this review it can be concluded that on solid soap papaya crude enzyme addition have an affect without enzyme more than soap on to remove dust, and it is not affectual significantly to lipids, pH, alkaline free, foam stability and specific density.

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