

**UNIVERSITI TEKNOLOGI MARA**

**STUDY ON COLLOIDAL LOTION  
FORMULATION OF AVENA SATIVA, ELEUSINE  
CORACANA AND TRITICUM DURUM WITH  
DIFFERENT CONCENTRATION AS SKIN  
MOISTURISER.**

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## ABSTRACT

Oats (*Avena sativa*) have been used since the Bronze Age and the investigations into their phytochemical constituents of oats are usually focused on their benefit of food. For the topical properties, oats act as anti-inflammatory agent, emollient and antioxidant. The active phytochemical presence in oat that mediate anti-inflammatory activity is Avenanthramides been approved to exhibit anti-oxidant activity in various cell-types. Finger millet (Ragi, *Eleusine Coracana* L.) is one of the cereal grass family named Poaceae of the monocotyledon group. *Eleusine Coracana* has high antioxidant property. This is because of high total phenolic content and also flavonoids. Wheat germ has higher concentration of protein, vitamins and phytic acid than the inner endosperm in the outer layers of the endosperm and the aleurone. The wheat germ oil is broadly used for external application, as it has benefit in getting rid of skin irritation along with skin cracking and skin dryness. It improves the circulation of blood and helps to repair the skin cells destroyed by the scorching heat of sun when the wheat germ oil is applied on the skin. In this study, 18 skin moisturizer samples were formulated with different colloidal grains, concentration and temperature mixing technique. The physical characteristic of each sample was assessed for their rheology, spreadability and stability for 3 months at 25°C temperature. Taken together, the results demonstrated that the physical characteristics of each sample was affected by concentration and had significantly difference affected by temperature mixing technique. All colloidal lotion formulations were stable except for 15% wheat germ colloidal lotion.

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# CHAPTER ONE INTRODUCTION

## 1.1 BACKGROUND

One of the common symptoms of numerous chronic diseases is dry skin (xerosis). Therefore, patients would feel offensive of their skin, uncomfortable, itching, and may reduce patients' quality of life. (Proksch & Lachapelle, 2005). There are various classes of moisturizer which based on their mechanism of action, including occlusive, humectants, emollients and protein rejuvenators (Lynde, 2016). Moisturizers available in market often promote the components of each of these classes in order to deliver their therapeutic effect. The major indication of use is dry skin (xerosis) and others include for atopic dermatitis, irritant contact dermatitis, ichthyosis and dermatoheliosis. Based on research, the moisturizing treatment involves a 4-step processes which include improvement of the skin barrier, improve skin hydration, decrease Transepidermal Water Loss (TEWL) and recover the lipid barriers' capability to retain and redeliver water (Lynde, 2016). Therefore, natural colloidal grain formulation should be considered in therapy of dry skin to reduce the use of corticosteroids and topical calcineurin inhibitors. Other current moisturizers available in the market include petrolatum and shea butter moisturizer.

Oats (*Avena sativa*) have been used since the Bronze Age and the investigations into their phytochemical constituents of oats are usually focused on their benefit of food. For instance,  $\beta$ -glucan in the oat made the oat seek as healthy-heart food because of their soluble-fibre criteria. For the topical properties, oats act as anti-inflammatory, emollient and antioxidant. However, in Malaysia, oats as topical formulation is not