

Preparation of eye counter pad containing caffeine and vitamin K in emulsified Emu oil base: *In vitro* and *in vivo* studies

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Background and Aims: The skin under eyes is the thinnest skin in the body. It has fewer oil glands and less collagen so wrinkle and dark circle around the eye appears with ages. The objective of our study was to develop eye pads containing caffeine ,vitamin k and emu oil in order to improve eye condition. Caffeine has the ability to constrict blood vessels, which can minimize dark circle , also has antioxidant properties that fight free radicals and wrinkle. Vitamin K helps with blood coagulation and circulation. poor circulation can increase the appearance of dark circles. Studies have shown that emu oil penetrates through layers of the dermis and hydrate the skin. it contains high levels of linolenic acid and oleic acid , substances that has anti-inflammatory and antiwrinkle effect on skin.

Methods: vit K was added to the emu oil and emulsified to the mixture of water and ethanol containing caffeine as main ingredient. this emulsion was loaded to the prepared cotton pads. These pads were evaluated for physicochemical characterization such as stability ,drug loading, content uniformity and releasing percent. In subsequent, human studies were performed for optimized formulation. 50 healthy women volunteers with wrinkle and dark circle participated in our study. They used 1 pad every day for 2 mounts. Effectiveness of our product was Survied by skin test model MC 900 set.

Results: the pads were successfully loaded with prepared emulsion containing 3 mg caffeine per pad. The loaded pads released 80% of their content after 30 min. human studies demonstrated the effectiveness of formulation and wrinkle was improved significantly.

Conclusions: Caffeine ,vit k and emuoil have antiwrinkle effect with 3 different mechanism .when this ingredients were used in one formulation the synergism effect appears and enhances antiwrinkle effect.

Keywords: Caffeine; Emu oil; Wrinkle; Eye pad