

DEDICATION

To My Father Soul bring

To My Great Mather

To My Beloved Wife

To My Kids

To My Brothers and Sisters

To My Friends and Fellows

To all of Them give These Efforts and Research

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 .patient for time I was away from them

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Plate 1. Black cumin flowers, seeds, leaves and fruit

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ABSTRACT

The aim of this research was to study the effect of germination for 2, 4 and 6 days under light and dark conditions on the chemical composition of two black cumin seeds originated from Ethiopia and Syria, and the sensory properties of supplemented kisra .The content of moisture, oil, crude protein, ash and total carbohydrates of ungerminated Ethiopian sample were slightly higher than the amounts of raw Syrian sample. Germination of the black cumin seeds for both samples increased oil and protein contents while other constituents were decreased. slightly change was observed in fatty acids after germination as saturated and total monounsaturated fatty acids were decreased, while the total of polyunsaturated fatty acids was increased. The total amino acids increased during germination and it affected by germination conditions. Germinated seeds showed noticeable decreases in the mineral contents K, Na, Ca and Fe. The characteristics of developed kissra produced using germinated and ungerminated black cumin seeds, were found to be acceptable in general. kissra made with the ungerminated whole . black cumin seeds was better on general preference

ARABIC ABSTRACT المستخلص العربي

كان الهدف من هذا البحث دراسة تأثير عملية الإنبات خلال 2 و 4 و 6 أيام تحت الضوء والظلام على التركيب الكيميائي لعينتين من بذور الكمون الأسود المستوردة من إثيوبيا وسوريا ودراسة الخصائص الحسية للكسرة المدعمة بها. محتوى الرطوبة، نسبة الزيت، الرماد، البروتين والكربوهيدرات في عينة بذور الكمون الأسود الإثيوبي الخام أعلى قليلا من نظيرتها السوري. عملية الإنبات أحدثت زيادة في كل من نسبة الزيت والبروتين مع انخفاض واضح في المكونات الأخرى. عند دراسة الأحماض الدهنية في الزيت لوحظ تغير طفيف على الأحماض الدهنية بعد عملية الإنبات حيث انخفضت نسبة الأحماض الدهنية المشبعة وغير المشبعة الأحادية وازدادت الأحماض الدهنية غير المشبعة المتعددة. زاد إجمالي الأحماض الأمينية الكلية خلال عملية الإنبات وتأثرت هذه الزيادة بالظروف المحيطة بعملية الإنبات. كما لوحظ انخفاض ملحوظ في محتوى المعادن لكل من البوتاسيوم والصوديوم والكالسيوم والحديد .

أظهرت نتائج الخصائص الحسية للمنتج المطور من الكسرة باستخدام بذور الكمون الأسود الإثيوبي المنبتة وغير المنبتة (كاملة ومطحونة) وجدت أنها مقبولة بشكل عام ، وان الكسرة المصنوعة من الحبة السوداء المطحونة غير المنبتة كانت أفضل في التفضيل العام .