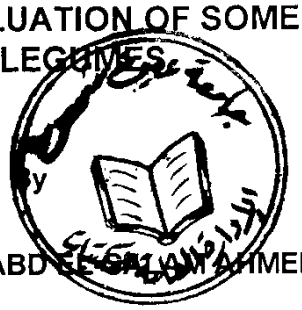
QUALITY EVALUATION OF SOME FOOD LEGUMES



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B. Sc. (Food Science and Technology)
Faculty of Agriculture,Ain Shams University, 1980

A thesis submitted in partial fulfillment
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In

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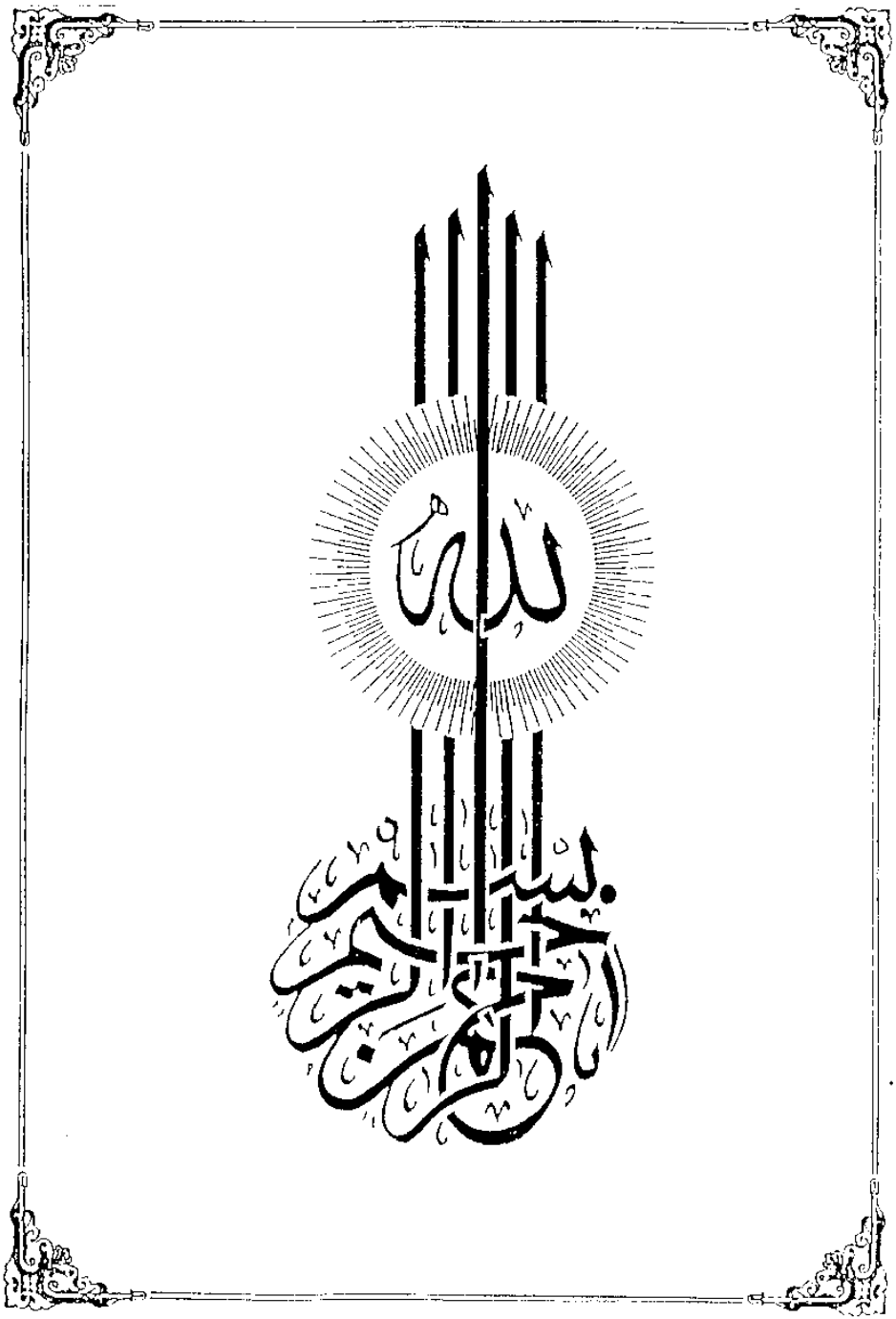

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ABSTRACT

Khaled Esmail Abdel-Salam Ahmed. Quality Evaluation of Some Food Legumes. Unpublished Master of Science. Ain Shams University, Faculty of Agriculture, Department of Food Science, 1999.

Four food legumes; kidney bean; cowpea; faba bean and lentil from different growing location obtained by the General Organization for Export and Import Control, Cairo, Egypt, were subjected to evaluation in comparing with the Egyptian cultivars for proximate composition, physical characteristics, heavy metals, insecticide residues and antinutritional factors content. On the other hand, the effect of soaking process in different soaking media (i.e., tap water, 0.5% sodium bicarbonate and 1% acetic acids solutions) on cooking quality as well as hydration kinetics at different soaking temperatures, were also studied. Significant variations in proximate composition in such legumes samples among the growing locations were found. Same observations were obtained for the physical properties and heavy metal content of raw seeds. Slight differences in seed coat percentages between the located samples of each legume crops. Contamination of studied raw seeds differed and varied depending on the type of legumes and location, however, mean concentrations of detected residues were below the permissible levels proposed by the maximum residues limits of codex.

Soaking in sodium bicarbonate increased the hydration characteristics, reduction rate of water soluble materials and reduction of antinutritional factors, however, cooking time was decreased significantly compared with the other soaking treatments. Generally, sodium bicarbonate and tap water are suitable medium for legume soaking to improve the cooking quality parameters and nutritive values of our studied legumes.

The activation energy of temperature dependence of hydration rate constant were in the range of 20 to 30 Kj/mol, for the legume seeds of higher hydration rates, and 4.65 to 17.43 Kj/mol for seeds of moderate and low hydration rate constant.

Key words: Food legumes, chemical proximate composition, physical characteristics, heavy metals, insecticide residues, soaking, hydration, cooking quality, antinutritional factors, tannins, trypsin inhibitors, phenolics, compounds.

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