

## USING THE METHOD OF PRINCIPAL COMPONENT ANALYSIS TO REDUCE VARIABLES AND ACCESS TO AMINO ACID EQUATIONS OF IRANIAN WHEAT VARIETIES

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**INTRODUCTION:** When the number of independent variables increases or the volume of samples is low, multicollinearity will happen. Principal Component Analysis (PCA) is a helpful statistical technique for reducing the variables. The first principal component with maximum variance of data which has been assigned to itself, is identifiable (Diana, 2011). The success of PCA method has been reported in various researches. The objectives of this study was recognition and assortment of factors affecting the determination of amino acid content in different wheat varieties and access to specified equation for each amino acid.

**MATERIALS AND METHODS:** In this research, 18 top Iranian wheat varieties in 54 samples were used. The values of proximate analysis (CP, DM, CF, EE, Ash and GE) were measured and applied. Determination of dry matter, fiber, fat, ash and energy was done in laboratory. Parts of the samples were sent to Degussa company in Germany in order to determination of protein content and 12 essential amino acids by NIRA. In PCA method, we used factor analysis through principal component and using SAS.

**RESULTS AND DISCUSSION:** As a result of this experiment, 3 principal components with cumulative percentage of %77.13 were obtained. In this way, the first factor vindicates %36.40 of changes and its specific value is 2.183. The second and third factor with vindication of 23.86 and %16.88 of changes with 1.43 and 1.01 specific radical respectively. To make the coefficient matrix, the factors with specific radical more than 1, were selected (3 factors). In a study, use PCA method for hepatic septicemia chickens (Dey et al., 2003). Other researchers used PCA to compare growth rate in roosters (Franco et al., 2012). Finally, we can access the equation corresponding to each specific amino acid using principal factors. According to criteria for PCA classifying method with  $R^2$  and MSE parameters, we can say that criteria obtained from this method, is acceptable and attributable.

**KEY WORDS:** Wheat amino acids, Proximate analysis, Principal component analysis.



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