

## Effect of different storage temperatures on Aroma Compounds of UF Iranian Cheese

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### Abstract

This study was done to determine Aroma compounds of Iranian UF cheeses which had been stored on different temperatures. Aroma compounds which had been measured were Acetaldehyde, Ethanol, Diacetyl and Acetoin. These compounds were measured on 5th, 23th and 30th days of ripening period (according to SPME –Mass spectrophotometry) after that sensory evaluation of all treatments was also done according to ranking scaling method. Effect of Acetaldehyde content of all treatment was significant ( $P<0.05$ ). Acetaldehyde content of all samples decreased during ripening period (30 days). Samples which had been stored at 20°C had higher acetaldehyde content than other treatments. But acetaldehyde content of samples which had been stored at 20°C, decreased during ripening period. Ethanol content of all treatments increased during ripening period and with due attention to ethanol content, effect of both treatments and time were significant ( $P<0.05$ ). Parallel to ethanol, diacetyl also increased during ripening period and with due attention to statistical analysis effect of both treatment and time were significant ( $P<0.05$ ). Acetoin content of all samples increased during ripening period and samples which had been stored at 20°C had the highest Acetoin among all treatments and effect of treatment and time of all samples with due attention to Acetoin content were significant ( $P<0.05$ ). Sensory evaluation of all samples showed that treatment which had been stored at 10°C had better quality than other treatments. According to above reasons mentioned it was concluded that treatment which had been stored at 10°C was the best sample.

**Keywords:** Acetaldehyde, Ethanol, Diacetyl, Acetoin, UF-Iranian white cheese.

Cheese is one of the most important milk products in milk has all the nutrients. Component of lactose, minerals and water while producing some curd from whey is disposed of. Through a number of beneficial bacteria in milk fat and protein for easier and more digestible and is basically a half-digested food is considered. The human digestive tract can not digest it very well could. In the absence of lactose cheese is another important nutrient. Lactose in milk when it enters the human digestive tract by the enzyme lactase, which is secreted by intestinal cells is degraded (1, 3). Enzymes derived from microorganisms, especially bacteria associated with cheese is a very important factor for the formation of lactic acid in cheese flavor compounds are effective. Lactobacillus as the dominant species in cheeses made with raw milk have been reported, because these organisms are able to continue to grow under severe selective and high-proteolytic properties, major role in the product of a their sensory characteristics show. Proteolysis by producing peptides and free amino acids, flavor combinations you like amines, acids, thiol and Tyvastrha role it plays in the development of cheese flavor. Branched fatty acids such as 4-ethyl Aktanvyk and 4-methyl Aktanvyk acids that are produced during lipolysis reach of intense flavor and aroma even small amounts can affect the resulting cheese (12). The purpose of this study, the best time is to find the optimum temperature of cheese ripening. Since the current temperature and maturity of cheese factories varied so that each of them their empirical findings of this study are to determine the maturity of cheese ripening by the optimum time and temperature of a proper strategy to experiment improve its suitability for consumption and efficient use of warehouse is production (economic aspect)

#### - Materials and Methods

Considering that the aim of this study was to examine the composition of the Ultrafiltration of cheese flavor. The effect of temperature on arrival must necessarily have determined the amount of these compounds. Location of this study is sufficient dairy herdsman and Nanotechnology Laboratory.

were suitable for cheese production, cheese production was suitable because of its dry matter in cheese production are listed in table 1 Compositional Specifications.

#### Results and Discussion

In this study, four major component affecting cheese flavor Ftay UF, were examined, respectively, Acetaldehyde, ethanol and acetyl-D is specified in days to maturity (days 5, 23 and 30) in terms of their value (mg / kg) were reported.

#### Effect of storage time and temperature on the rate of Acetaldehyde

As the chromatogram is shown in Figure 1, the 5th day of the average yield to maturity of Acetaldehyde stored at refrigerator temperature (control), 89/297 treatment was maintained at c10, 36/319° and the treatments were stored at 20 ° 46/351 mg kg (Figure 2).

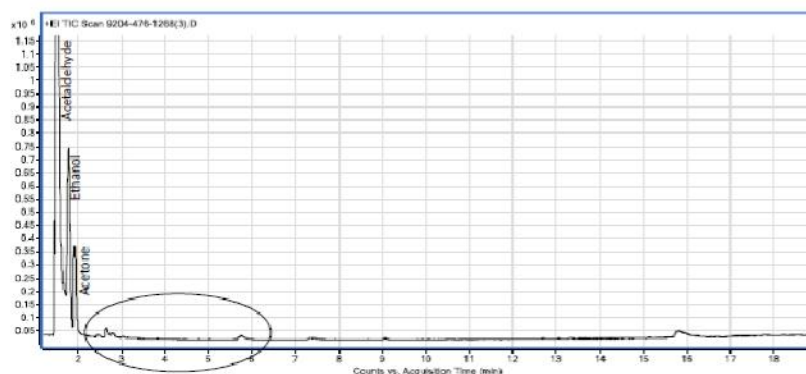


Figure 1 - chromatogram Acetaldehyde value changes among different treatments

Effect of storage time and temperature on the amount of ethanol

As the chromatogram (Figure 5) is shown in terms of treatment time and treatment interaction - since a significant amount of ethanol (05/0P <) was changed during ripening

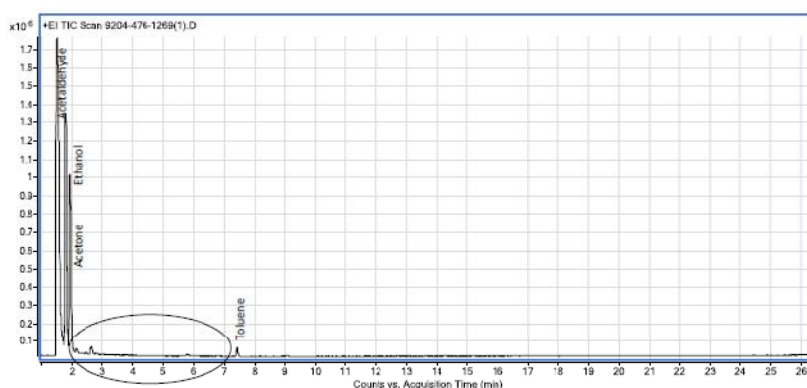


Figure 2 - chromatogram of ethanol changes in maturation period of 30 days.

Frequent alcohol ethanol in a whey UF Ftay Iran. Alcohol and other types of small cheese cheese chemicals are a major part of their value increases . The first type are caused by alcohols, aldehydes restoration . They are part of the flavor of fruit and nuts, cheese and flavor defects are caused by excess amounts of them . Second, by restoring the corresponding alcohols are produced by enzymatic methyl Ktvnhay . Ethanol- induced degradation of lactose in cheese is less important despite its high value , but it helps to form esters ( 16 ) . Due to the amount of alcohol than ethanol area under the curve . Ethanol is produced by fermentation of lactose or citrate ( 12 ) . Or produced from alanine catabolism ( 14 ) and other alcohols to the corresponding aldehydes One of the metabolism of fatty acids and amino acids which are the origin ( 15 ) . The majority of secondary alcohols by enzymatic reductive Ktvnhay corresponding methyl alcohols are formed by first- methyl branched like 3 - methyl- 1 - butanol is possible through the restoration of 3 - methyl Bvtanal formed by the decomposition Astrkr be derived from ( 8 ) .

### Sensory evaluation

Table 1 Effect of treatment time and treatment interaction - give me the time of sensory evaluation. There are significant differences between different treatments ( $05/0P <$ ). Sensory scores were assigned to different treatments, treatments maintained at  $c4, 43/7^\circ$  maintenance treatment in  $c10, 98/7^\circ$  treatment and maintained at  $c20, 73/6^\circ$  is. (Figure 3)

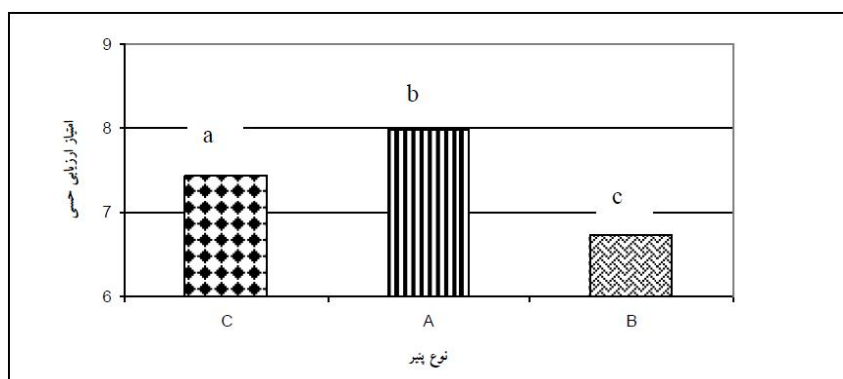


Figure 3 - Results of the sensory evaluation of the different treatments

At the time of the arrival of sensory score of the 5th day of maturity, 25/7 and I have 23 days to maturity, 58/7, and on the 30th day of maturity, 31/7 reported (Figure 4).

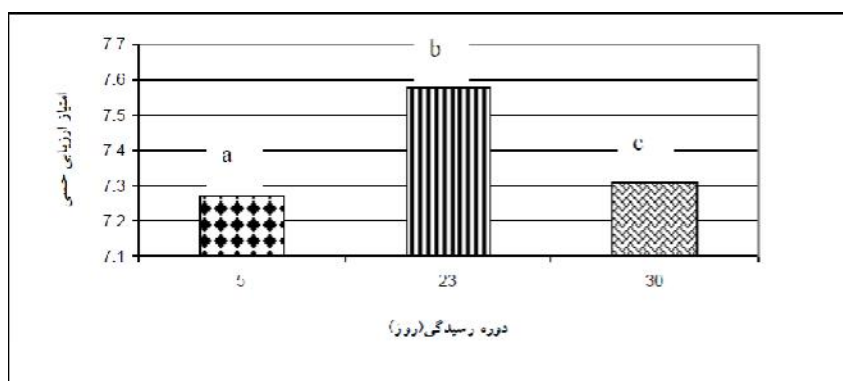


Figure 4 - Results of the sensory evaluation of the maturity period of 30 days

As can be seen from the plots maintained at  $c10^\circ$  with higher sensory scores than other treatments, because these treatments in addition to having higher levels of acetoin Ethanol and Acetaldehyde amount of steel and was observed in a lesser extent empowers evaluation of more points to it (Figure 5).

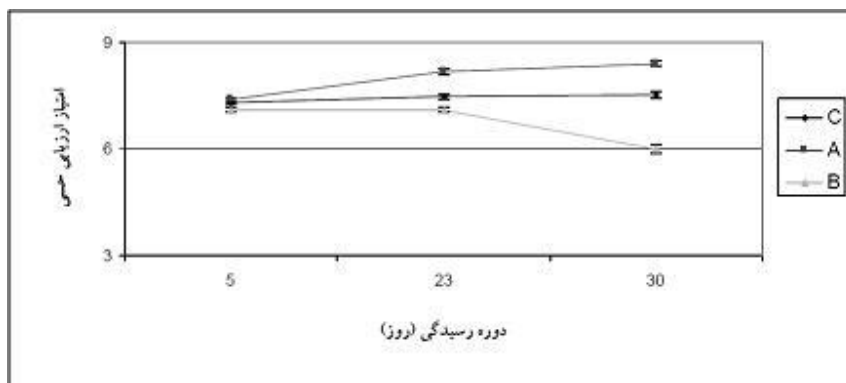


Figure 5 - Effect of interaction - time on sensory evaluation during the investigation period of 30 days

### Conclusions

In total, according to the results of the evaluation of the effective combination of aromas , as well as sensory characteristics of cheeses c10 addition to having the<sup>o</sup>Ftay UF treatments found maintained at proper values of the effective combination of flavor and texture characteristics maturity, acceleration can be compared with other treatments may help the economy of the country cheese industry are enormous .consumers are of all ages .

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