Survey of Formulation, Production and Sensory Evaluation of Pistachio Butter

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This study carried out at industrial and laboratorial scale to produce a by- product from pistachio *(pistacia vera*) named "Pistachio butter" for the purpose of finding a way for better use of shut-mouth pistachios which are not be used as dried nuts, and also considering the importance and global fame of pistachio which Iran has about more than 50% of world production .To do this descriptive- explorative study, pistachios (CT: Fandoghee- Ibraheemi with 16% shut-mouth) were gathered from Kerman gardens, then peeled, milled and mixed with additives containing lecithin, antioxidant, sugar (or salt) and flavoring agents (cardamom and vanilla) and finally packed after kneading and preparing by using pistachios with third skin or peeled. Chemical components of the products also measured according to the standard operations. Produced samples, difference, dependence and relationship of them preparing, by using pistachios with third skin or peeled .At first, 4 treatments from every group of sweet or salt base were made. Then, Sensory evaluations for flavor of treatments were carried out by 5 member instructed sensory panelists, based on scoring test. Treatment with 30% sugar from sweet flavor and treatment with 1% salt from salt flavor were selected which had significant difference with other treatments ($p<0.05$). Then two selected treatments on society were evaluated by paired preference evaluating method. Sweet base was preferred with significant difference ($P<0.05$). By selecting sweet base in society, sweet base pistachio butter with vanilla and cardamom were made and again were sensory evaluated by instructed panelists using scoring method. According to the received results pistachio butter with 40% sugar in vanilla treatments and pistachio butter with 30% sugar in cardamom treatments were selected because of no significant difference with 50% sugar treatment and having significant difference with 15% sugar treatment. Two preferred treatments were evaluated by paired preference method on society again, which there was no significant difference between two treatments.

At last for studying effect of shelf life on flavor , after 5 months , vanilla and cardamom treatments were evaluated by ranking method using in – house panel, which cardamom treatment with 30% sugar and vanilla one with 40% sugar were selected because of having significant difference with the others ($p<0.05$).

Physicochemical characteristics of every produced sample with different percents of sugar in vanilla and cardamom treatments were measured. Determining shelf life in durations of 15, 30,45,60,90 and 120 days were done by measuring peroxide and acidity index in terms of oleic acid noting related standard which the result showed high stability in pistachio butter. SPSS software was used for statistical analysis. Descriptive statistics in form of mean and standard deviation were used for quantitative parameters and physicochemical characteristics

For sensory characteristics, depend on cases, variance analysis and LSD test, ranking method and freedman test and also two sentence two scope test were used.

Key words: Pistachio butter, Formulation, sensory evaluation

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