

Public Abstract

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Title:EFFECT OF FAT MIMETICS ON THE HEADSPACE RELEASE OF FIVE STRAWBERRY FLAVOR COMPOUNDS

Obesity and chronic diseases, such as hypertension and cancer, have become important threats to Americans' health over the last few decades. Most consumers know about the connection between high saturated fat and chronic diseases, so many consumers prefer to consume low fat foods rather than high fat foods. However, consumers want to get the same taste in low fat foods. Fat has been reported to influence the qualitative, quantitative and temporal perception of flavor in products, and low fat foods mostly have poorer flavor quality. So, improving the flavor profile of low fat foods has become an important issue in food science. For ice cream, dairy fat plays an important role for flavor release, mouthfeel, appearance, texture and melting profile. Thus, the main problems of low fat ice cream are poor flavor profile and mouthfeel. Strawberry flavor is one of the most popular ice cream flavors in the world. However, research on strawberry flavor ice cream is lacking. The main problem of reducing fat in strawberry ice cream is that the flavor would be dramatically influenced by changing the fat content, so using fat mimetics to improve the flavor profile becomes very important for consumer acceptability of reduced fat strawberry ice cream. The primary goal of this study is to determine how fat mimetics (Simplese® and Litesse®) affect the flavor release of five strawberry flavor compounds (alpha-ionone, cis-3-hexenol, gamma-undecalactone, ethyl-3-methyl-3-phenylglycidate and furaneol) from six different fat levels' emulsion systems (0% fat, 4% fat, 4% fat + Simplese®, 4% fat + Litesse®, 4% fat + Simplese®/Litesse®, 10% fat). From the aspect of fat levels, the release of cis-3-hexen-1-ol, alpha-ionone, gamma-undecalactone and ethyl-3-methyl-3-phenylglycidate was significantly decreased with increasing fat levels, but furaneol had the opposite result. From the aspect of fat mimetics and flavor release, there was no significant difference between flavor release from the six emulsion systems for alpha-ionone and ethyl-3-methyl-3-phenylglycidate. However, the flavor release of cis-3-hexen-1-ol and gamma-undecalactone was more similar to 10% fat when Litesse® was used as the fat mimetic in the 4% ice cream mix. On the contrary, the flavor release of furaneol was more similar to 10% fat when Simplese® was used as the fat mimetic. These results provide useful references for formulating flavorings for strawberry ice cream with reduced fat contents. However, there are many more attributes that need to be considered when formulating low fat ice cream, such as mouthfeel, melting time and texture. Thus it would be important to choose a fat mimetic that can not only provide a good flavor profile but also match other important ice cream attributes.