

The Use of Job's Tear (*Coix lacryma-jobi* L.) Flour to Substitute Cake Flour in Butter Cake

Marco Kutschera and Wunwisa Krasaekoopt

Faculty of Biotechnology, Assumption University, Bangkok, Thailand

E-mail: <wunwisaKrs@au.edu>

Abstract

Job's tear flour was produced by using wet milling method. The soaked job's tear grains were blended with water using the ratio of grains to water as 1:10. The paste was filtered and then dried in an oven at 40°C. After grinding to powder, some chemical properties of Job's tear flour were analyzed. The flour was higher in protein (10.9 %) and fiber contents (0.85 %), conversely, lower swelling power (11.0 %). The flour was used to replace the cake flour as 20, 40 and 60% in the formula of butter cake. Twenty percent of the flour obtained the highest scores for Just About Right test, resulting in only two attributes as texture and sweetness needed to be improved. Three levels of flour as 10, 15 and 20% were studied as well as three levels of sugar, 175, 180 and 185 g. The butter cake made by using 15% Job's tear flour and 175 g sugar obtained the highest preference scores. This product was also remarkably accepted by the consumers (87%), with the preference score of 7.3. There was also a potential market for this product, with 73% of consumers willing to buy. Additions of Job's tear flour tended to increase fiber and protein contents, although it affected the texture of the product.

Keywords: *Job's tear, butter cake, flour, consumer acceptance.*

1. Introduction

Job's tears (*Coix lacryma-jobi* L.), commonly known as coix, are originally from India and now are native to South East Asia region such as China, Japan, the Philippines, Burma, and Thailand. Their seeds have been used to make a variety of products. The mature seeds after de-hulling and cleaning are boiled and eaten with cooked rice. The pounded flour is sometimes also mixed with water and taken as such as cooling drink like barely or flour water. Raw kernels are used as peanut. Job's tear is used by the Garo, Karbi and Naga tribes for brewing of beer from the pounded grains (Burkill 1935), as well as, it can be used in ornamental purpose, rosaries and necklace. In China it is used as traditional medicine and supplementary medical food. In Thailand the seed coat is removed and the seeds are consumed whole. The seeds are also boiled with water to produce beverage product, which is available in the market as an alternative healthy food. The beneficial effects of Job's

tears are reducing liver fat accumulation, protecting from tumor stimulating compounds, protecting against viral infection, reducing allergic reaction, reducing coronary artery disease and atherosclerosis and reducing osteoporosis (Chang *et al.* 2003; Hung and Change 2003; Chun *et al.* 2004; Yu *et al.* 2011). In addition, Job's tear grain can be polished and milled as flour and used as food ingredients in many kinds of products. Application of this flour in bakery products is also of interest. Due to the lack of gluten, dough made from Job's tear flour will not be raised. A good mixture in bakery products is 70% wheat flour and 30% Job's tear flour. Many studies reported the use of Job's tear flour in cookies and bread (Chawakorn 2006; Cheappensuk 2006; Reungkajorn *et al.* 2007), whereas the use of this flour in butter cake has been studied earlier only by Kutschera (2011). Therefore, this contribution aims to report the use of Job's tear flour to replace wheat flour in butter cake. Consumer acceptance of butter cake containing Job's tear flour is also investigated.