

Effect of Low Calorie Sweeteners on Chemical, Sensory Evaluation and Antidiabetic of Pumpkin Jam Fortified with Soybean

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Abstract : Introduction: In the recent decades, production of low-calorie jams is needed for diabetics that comprise low calorie fruits and low calorie sweeteners. Object: the research aimed to prepare low calorie formulated pumpkin jams (fructose, stevia and aspartame) incorporated with soy bean and evaluate the jams through chemical analysis and sensory evaluation after storage for six month. Moreover, the possible effect of consumption of low calorie jams on diabetic rats was investigated. Methods: Five formulas of pumpkin jam with different sucrose, fructose, stevia and aspartame sweeteners and soy bean were prepared and stored at 10 oC for six month compared to ordinary pumpkin jam. Chemical composition and sensory evaluation of formulated jams were evaluated at zero time, 3 month and 6 month of storage. The best three acceptable pumpkin jams were taken for biological study on diabetic rats. Rats divided into group (1) served as negative control and streptozotocin induce diabetes four rat groups that were positive diabetic control (group2), rats fed on standard diet with 10% sucrose soybean jam, fructose soybean jam and stevia soybean jam (group 3, 4&5), respectively. Results: The content of protein, fat, ash and fiber were increased but carbohydrate was decreased in low calorie formulated pumpkin jams compared to ordinary jam. Production of aspartame soybean pumpkin jam had lower score of all sensory attributes compared to other jam then followed by stevia soybean Pumpkin jam. Using non nutritive sweeteners (stevia & aspartame) with soybean in processing jam could lower the score of the sensory attributes after storage for 3 and 6 months. The highest score was recorded for sucrose and fructose soybean jams followed by stevia soybean jam while aspartame soybean jam recorded the lowest score significantly. The biological evaluation showed a significant improvement in body weight and FER of rats after six weeks of consumption of standard diet with jams (Group 3,4&5) compared to Group1. Rats consumed 10% low calorie jam with nutrient sweetener (fructose) and non nutrient sweetener (stevia) soybean jam (group 4& 5) showed significant decrease in glucose level, liver function enzymes activity, and liver cholesterol & total lipids in addition of significant increase of insulin and glycogen compared to the levels of group 2. Conclusion: low calorie pumpkin jams can be prepared by low calorie sweeteners and soybean and also storage for 3 months at 10oC without change sensory attributes. Consumption of stevia pumpkin jam fortified with soybean had positive health effects on streptozotocin induced diabetes in rats.

Keywords : pumpkin jam, HFCS, aspartame, stevia, storage

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