# Development of Reduced Fat, Inulin Incorporated Prebiotic Butter

M.P.I. Priyadarshani[1]* and D.C. Mudannayake[1]

[1]*Department of Animal Science, Uva Wellassa University, Badulla, Sri Lanka*

Butter is a dairy product with at least 80% fat which contributes to high caloric value of a meal. Health conscious consumers today seek for products with low caloric contents. Inulin is a prebiotic and further can be used as a fat replacer in various food products including ice cream, yoghurt, cheese and cookies. This study was aimed to develop a reduced fat, prebiotic butter incorporating inulin as the fat replacer. Inulin was incorporated into butter in two methods namely as water-based gel and oil-based gel. Water-based inulin gel (40% w/w) was prepared by heating and cooling method, while oil-based inulin gel (40% w/w) was prepared by homogenization method using commercially available olive oil. Soy lecithin was added as the emulsifier in both inulin gels. Butter samples were prepared by incorporating either water-based or oil-based inulin gels to have final inulin concentrations of 4%, 8%, 12%, 16% and 20% (w/w) in butter. No inulin added butter was used as the control. All 11 butter samples were chemically analyzed for fat, moisture and ash contents, peroxide value and free fatty acid value. Organoleptic properties were analyzed using a sensory evaluation with 30 panelists. Sensory evaluation results indicated that 20% oil-based inulin added butter had significantly higher ($P < 0.05$) sensory attributes including, texture, color, aroma, taste, sweetness, mouth feel and overall acceptability compared to all other butter samples. In addition, oil-based inulin added butter samples had significantly lower ($P < 0.05$) peroxide values compared to their counterparts. The fat contents of inulin incorporated all butter samples were significantly ($P < 0.05$) lower compared with the control. Results revealed that 50% of fat in butter can be replaced successfully using 20% water-based inulin gel. This study indicated that inulin can be successfully used as a fat replacer in dairy spreads.

*Keywords:* Inulin, Fat replacer, Dairy spreads, Olive oil, Butter