Jerusalem artichoke (JA) (*Helianthus tuberosus*) tuber is a source of inulin or fructo-oligosaccharides not digested in the human intestinal tract remaining highly available to the gut bacteria flora. Two varieties of JA tubers (JA 89 Chaiyaphum and HEL 65) grown in Thailand were studied for changes in moisture and inulin contents during cold storage (5°C). The moisture content of the tuber decreased significantly from 0 to 10 weeks (82.1 to 53.8%) but inulin content decreased at 5 and 10 weeks (18.0 and 21.9%, respectively) in both varieties. Cabinet drying (55, 65, and 75°C) and air flow rates (3 and 5 m/s) were used to obtain JA powder. JA 89 Chaiyaphum powder dried at 55°C with air flow rate of 5 m/sec had the highest inulin content (47.6%) compared to HEL 65 (33.3%). Inulin powder was extracted from JA powder and dried using spray and freeze drying. Spray dried inulin powder had the highest water soluble index and viscosity. The low fat cake substituted by JA and inulin powder (10, 20 and 30%) showed a reduction in lightness (L*) and specific volume compared to the control (full fat cake). Low fat and control cakes had similar texture (P>0.05) in terms of hardness, adhesiveness, cohesiveness and springiness using a Texture Analyzer, except for the cake contained 30% inulin powder. Consumer acceptance scores showed that cakes containing 20% inulin had similar overall acceptability, color, flavor and aroma including cake texture compared to the control (P>0.05). Glycemic index of the cakes will be reported.