

## INTISARI

Meningkatnya kejadian *slow learner* pada anak membuktikan perlu adanya suplemen otak yang kaya akan antioksidan. Bunga krisan diketahui memiliki aktivitas antioksidan yang baik. Selain itu, minyak sachal inchi diketahui mengandung asam lemak omega-3 yang dapat membantu perkembangan kinerja otak. Kombinasi dari keduanya dapat dijadikan alternatif suplemen otak pada anak berupa *gummy candy*. Dalam proses pembuatan *gummy candy*, suhu dan lama pemanasan merupakan titik kritis dan memiliki peranan yang sangat penting terhadap kualitas sediaan. Penelitian ini merupakan penelitian eksperimental yang bertujuan untuk mengetahui pengaruh variasi suhu dan waktu pemanasan terhadap karakteristik fisik dan aktivitas antioksidan *gummy candy* ekstrak bunga krisan dan minyak sachal inchi.

Ekstrak bunga krisan dibuat dengan metode maserasi menggunakan pelarut etanol 70%, lalu diuji aktivitas antioksidan lalu diuji aktivitas antioksidan pada ekstrak bunga krisan dan minyak sachal inchi dengan metode reduksi DPPH. Selanjutnya, dilakukan formulasi sediaan *gummy candy* kombinasi ekstrak bunga krisan dan minyak sachal inchi. Lalu, diuji karakterisasi fisik dan aktivitas antioksidan untuk setiap produk *gummy candy* yang dihasilkan. Respon tiap karakteristik berupa organoleptis, pH, keseragaman bobot, *moisture content*, dan elastisitas. Kemudian, dilakukan analisis dan dioptimasi dengan metode faktorial menggunakan *software Design Expert versi 13*. Kemudian, dibuat *gummy candy* hasil formula optimum, lalu dilakukan uji karakterisasi fisik dan aktivitas antioksidan.

Hasil penelitian menunjukkan bahwa suhu dan waktu pemanasan berpengaruh terhadap karakteristik fisik *gummy candy*, yaitu warna, *moisture content*, dan tekstur. Formula optimum diperoleh pada suhu pemanasan 105°C dan waktu pemanasan selama 7 menit. Nilai IC<sub>50</sub> ekstrak bunga krisan, minyak sachal inchi, serta kombinasi ekstrak bunga krisan dan minyak sachal inchi secara berturut-turut yaitu  $67.212 \pm 0.580 \mu\text{g/mL}$ ,  $318.838 \pm 2.785 \mu\text{g/mL}$ , dan  $233.602 \pm 2.261 \mu\text{g/mL}$ . Setelah proses pemanasan, terjadi penurunan aktivitas antioksidan pada *gummy candy* ekstrak bunga krisan, *gummy candy* minyak sachal inchi, serta *gummy candy* kombinasi ekstrak bunga krisan dan minyak sachal inchi secara berturut-turut sebesar 2, 2.5, dan 2 kali lipat.

**Kata Kunci:** Bunga Krisan, Minyak Sachal Inchi, *Gummy Candy*, Suhu Pemanasan, Waktu Pemanasan

## ABSTRACT

The increasing incidence of slow learners in children proves the need for brain supplements that are rich in antioxidants. Chrysanthemum flowers are known to have good antioxidant activity. In addition, sachai inchi oil is known to contain omega-3 fatty acids which can help develop brain performance. The combination of the two can be used as an alternative brain supplement for children in the form of gummy candy. Temperature and duration time are crucial elements in the production of gummy candy and greatly influence the final products quality. The purpose of this experimental investigation is to ascertain how temperature and duration time variations affect the physical properties and antioxidant activity of gummy candies made with chrysanthemum flower extract.

The chrysanthemum flower was prepared using the maceration process with a 70% ethanol solvent. Then, the chrysanthemum extract and sachai inchi oil were tested using DPPH reduction. The next step involves creating gummy candy preparations with sachai inchi oil and chrysanthemum flower extract. Subsequently, each gummy candy product manufactured was examined for physical attributes and antioxidant activity, and the dose formulation was completed. The response to each characteristic is organoleptic, pH, weight uniformity, water content and elasticity. Then, analysis was carried out and optimized using the factorial method using Design Expert software version 13. After that, gummy candy was made with the optimum formula, then physical characterization and antioxidant activity tests were carried out.

The result of the experiment indicates that temperature and heating duration have an impact on the color, water content, and texture of gummy candy. After heating for seven minutes at 105°C, the ideal recipe was produced. The IC<sub>50</sub> values of sachai inchi oil, chrysanthemum flower extract, and the combination of sachai inchi oil and chrysanthemum flower extract were  $233.602 \pm 2.261 \mu\text{g/mL}$ ,  $318.838 \pm 2.785 \mu\text{g/mL}$ , and  $67.212 \pm 0.580 \mu\text{g/mL}$ . After the heating process, there was a decrease in antioxidant activity in chrysanthemum extract gummy candy, sachai inchi oil gummy candy, and combination of chrysanthemum extract and sachai inchi oil gummy candy respectively by 2, 2.5, and 2 times.

**Keywords: Chrysanthemum Flowers, Sachai Inchi Oil, Gummy Candy, Heating Temperature, Duration of Heating**