

## INTISARI

Defisiensi vitamin A masih menjadi masalah gizi yang signifikan di Indonesia, terutama pada anak-anak, yang dapat menyebabkan gangguan kesehatan serius. Suplementasi konvensional sering kali kurang optimal karena rendahnya penerimaan anak akibat rasa pahit dan kesulitan menelan. Inovasi *gummy candy* menawarkan solusi praktis dan menarik untuk berbagai usia, dengan tekstur kenyal utama dari *gelling agent*. Penelitian ini bertujuan untuk mengoptimalkan formula *gummy candy* sebagai bentuk suplementasi vitamin A yang inovatif, praktis, dan menarik, dengan memfokuskan variasi konsentrasi gelatin dan pektin sebagai *gelling agent* untuk mencapai karakteristik fisik optimal.

Optimasi formula dilakukan menggunakan *Simplex Lattice Design* (SLD) melalui *software Design Expert*, dengan konsentrasi gelatin (10,5-11,5%) dan pektin (0,5-1,5%), serta respon meliputi *hardness*, *chewiness*, *gumminess*, *springiness*, dan susut pengeringan. Formula optimum diverifikasi melalui uji *one sample t-test* dengan tingkat kepercayaan 95%.

Formula optimum *gummy candy* diperoleh pada komposisi gelatin 13,85 g dan pektin 0,6 g dengan total bobot tiap betas 120 g. Formula optimum tersebut menghasilkan karakteristik fisik berupa kadar air  $11,73\% \pm 0,001$  yang memenuhi persyaratan SNI, yaitu maksimal 20%. Profil tekstur yang dihasilkan meliputi nilai *hardness*  $25,43 \pm 1,28$  N, *gumminess*  $23,85 \pm 0,91$  N, *chewiness*  $22,50 \pm 1,45$  N, dan *springiness*  $0,94 \pm 0,04$ . Hasil verifikasi menunjukkan tidak ada perbedaan signifikan ( $p > 0,05$ ) antara nilai prediksi dan hasil aktual, sehingga formula memenuhi parameter yang diharapkan.

**Kata Kunci:** *Gummy candy*, Vitamin A, *gelling agent*, gelatin, pektin

## ABSTRACT

Vitamin A deficiency remains a significant nutritional problem in Indonesia, especially among children, which can lead to serious health issues. Conventional supplementation is often suboptimal due to poor acceptance by children caused by bitter taste and wallowing difficulties. Gummy candy presents a practical and appealing alternative for various age groups, with *chewiness* provided by gelling agents. This study aimed to optimize the formula of gummy candy as an innovative, practical, and attractive form of vitamin A supplementation, focusing on variations in gelatin and pectin concentrations as gelling agents to achieve optimal physical characteristics.

Formula optimization was conducted using a Simplex Lattice Design (SLD) with Design Expert software, varying gelatin (10,5–11,5%) and pectin (0,5–1,5%) concentrations. Responses evaluated included *hardness*, *chewiness*, *gumminess*, *springiness*, and moisture content. The optimum formula was verified through a one-sample t-test at a 95% confidence level.

The optimum gummy candy formula was obtained with a composition of 13,85 g gelatin and 0,6 g pectin per 120 g total batch weight. The results showed a moisture content of  $11,73\% \pm 0,001$  (below the SNI maximum of 20%), *hardness*  $25,43 \pm 1,28$  N, *gumminess*  $23,85 \pm 0,91$  N, *chewiness*  $22,50 \pm 1,45$  N, and *springiness*  $0,94 \pm 0,04$ , indicating that the gummy candy had a chewy, elastic texture and met the target formulation characteristics. The verification results showed no significant difference ( $p$  value  $> 0,05$ ) between the predicted and actual values, confirming that the formula met the expected parameters.

**Keywords:** Gummy candy, Vitamin A, gelling agent, gelatin, pectin