

## **UJI STABILITAS SENYAWA ANALOG MONOKARBONIL KURKUMIN TERHADAP VARIASI PELARUT DAN SUHU**

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### **INTISARI**

Telah dilakukan uji stabilitas senyawa analog monokarbonil kurkumin terhadap variasi pelarut dan suhu. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh variasi pelarut dan suhu terhadap stabilitas analog monokarbonil kurkumin serta membandingkan kestabilan tersebut dengan senyawa kurkumin.

Penelitian ini diawali dengan pengujian kemurnian dengan Kromatografi Lapis Tipis (KLT) dan dilanjutkan dengan membuat larutan analog monokarbonil kurkumin dengan variasi pelarut dan suhu. Senyawa uji dengan konsentrasi 10  $\mu\text{g/mL}$  pada variasi pelarut etanol, etanol:akuades (1:1) dan (1:2), buffer klorida pH 2, buffer fosfat pH 7 dan buffer karbonat pH 11 serta variasi suhu ruang, 35, 40 dan 50 °C didiamkan pada variasi waktu 0, 15, 30, 45 dan 60 menit. Uji stabilitas dilakukan dengan spektrofotometer UV-Vis.

Hasil penelitian menunjukkan bahwa kurkumin paling tidak stabil pada pelarut buffer karbonat pH 11 suhu 50 °C, terdegradasi 94,82 % atau sebanyak 349,3  $\text{g mol}^{-1}$ , selama 60 menit pendiaman. Senyawa 1,5-bis(3,4-dimetoksifenil)penta-1,4-dien-3-on paling tidak stabil pada etanol:akuades (1:2) suhu ruang, terdegradasi 76,58 % atau sebanyak 271,4  $\text{g mol}^{-1}$ , selama 60 menit pendiaman. Senyawa 2,6-bis(4-hidroksibenzilidin)sikloheksanon paling tidak stabil pada buffer klorida pH 2 suhu 40 °C, terdegradasi 61,99 % atau sebanyak 189,9  $\text{g mol}^{-1}$ , selama 60 menit pendiaman. Ketiga senyawa cenderung memiliki kestabilan yang tinggi pada variasi pelarut etanol, etanol:akuades (1:1) dan etanol:akuades (1:2), kecuali 1,5-bis(3,4-dimetoksifenil)penta-1,4-dien-3-on yang kestabilannya cukup rendah pada pelarut etanol:akuades (1:1) terutama pada pelarut etanol:akuades (1:2). Reaksi degradasi pada senyawa kurkumin, senyawa 1,5-bis(3,4-dimetoksifenil)penta-1,4-dien-3-on dan senyawa 2,6-bis(4-hidroksibenzilidin)sikloheksanon dipengaruhi oleh variasi pelarut dan suhu.

Kata kunci: analog monokarbonil kurkumin, degradasi, kurkumin

## **STABILITY TEST OF MONOCARBONYL ANALOGUE OF CURCUMIN AT DIFFERENT SOLVENTS AND TEMPERATURES**

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### **ABSTRACT**

Stability test of monocarbonyl analogue of curcumin at different solvent and temperature has been done. The purpose of this research is to determine the effects of solvent and temperature variations on the stability of monocarbonyl analogue of curcumin and compare the stability with curcumin.

This research was begun with purity test with Thin Layer Chromatography (TLC) and continued with preparation samples variation on solvent and temperature. Samples 10 µg/mL on solvents variation of ethanol, ethanol:aquadest (1:1) and (1:2), chloride buffer pH 2, phosphate buffer pH 7 and carbonate buffer pH 11 as well as temperatures variation of room temperature, 35, 40 and 50 °C were left at time variations of 0, 15, 30, 45 and 60 minutes. The stability tests are conducted with the UV-Vis spectrophotometer.

The results showed that curcumin was least stable at carbonate buffer pH 11 at 50 °C, degraded 94.82 % or 349,3 g mol<sup>-1</sup> for 60 minutes. The 1,5-bis(3,4-dimethoxyphenyl) penta-1,4-dien-3-on was least stable at ethanol:aquadest (1:2) at room temperature, degraded 76.58 % or 271,4 g mol<sup>-1</sup> for 60 minutes. The 2,6-bis(4-hydroxybenzilidine) cyclohexanone was least stable at chloride buffer pH 2 at 40 °C, degraded 61.99 % or 189,9 g mol<sup>-1</sup> for 60 minutes. Three compounds tend to have high stability in solvents variation of ethanol, ethanol:aquadest (1:1) and ethanol:aquadest (1:2), except for 1,5-bis(3,4-dimethoxyphenyl) penta-1,4-dien-3-on which had a low stability in ethanol:aquadest (1:1) solvent, especially in ethanol:aquadest (1:2) solvent. Degradation reaction of curcumin, 1,5-bis(3,4-dimethoxyphenyl) penta-1,4-dien-3-on and 2,6-bis(4-hydroxybenzilidine) cyclohexanone were affected by variations of solvents and temperatures.

**Keywords:** curcumin, degradation, monocarbonyl analogue of curcumin