

## RINGKASAN

Tempe merupakan produk fermentasi yang umumnya berbahan baku kedelai, namun kacang merah (*Phaseolus vulgaris* L.) dapat digunakan sebagai bahan alternatif. Pertumbuhan kapang dalam fermentasi dipengaruhi oleh ketersediaan nutrisi, terutama sumber karbon. Penambahan pati tapioka sebagai sumber karbohidrat tambahan diduga dapat mendukung pertumbuhan kapang serta memengaruhi kualitas tempe. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan pati tapioka terhadap pertumbuhan miselium *Rhizopus* sp., karakter mikroskopis kapang, dan kualitas organoleptik tempe kacang merah. Penelitian menggunakan empat perlakuan penambahan pati tapioka, yaitu T0 (kontrol, 0%), T1 (5%), T2 (10%), dan T3 (15%). Pertumbuhan miselium diamati pada inkubasi 24 jam dan 48 jam, karakter mikroskopis diamati menggunakan mikroskop, dan uji organoleptik dilakukan terhadap warna, aroma, tekstur, dan rasa. Data pertumbuhan miselium dianalisis menggunakan uji ANOVA satu arah dan dilanjutkan dengan uji Duncan. Hasil penelitian menunjukkan bahwa penambahan pati tapioka berpengaruh nyata terhadap pertumbuhan miselium *Rhizopus* sp., dengan pertumbuhan paling optimal pada perlakuan T3 (15%), terutama pada inkubasi 48 jam. Secara mikroskopis, kapang yang tumbuh menunjukkan karakter khas *Rhizopus* sp., yaitu hifa aseptat bercabang, sporangiofor tegak, sporangium bulat hingga oval, serta kolumela, tanpa perbedaan morfologi antarperlakuan. Penambahan pati tapioka juga memengaruhi kualitas organoleptik, di mana tempe dengan penambahan pati tapioka menunjukkan tingkat penerimaan panelis yang lebih baik dibandingkan kontrol. Berdasarkan hasil penelitian, penambahan pati tapioka dapat meningkatkan pertumbuhan kapang dan kualitas tempe kacang merah tanpa mengubah karakter mikroskopis *Rhizopus* sp..

**Kata Kunci:** Tempe kacang merah, pati tapioka, pertumbuhan miselium *Rhizopus* sp., kualitas organoleptik.

## SUMMARY

*Tempeh is a fermented product generally made from soybeans, red beans (Phaseolus vulgaris L.) can also be used as an alternative ingredient. Mold growth in fermentation is influenced by the availability of nutrients, especially carbon sources. The addition of tapioca starch as an additional carbohydrate source is thought to support mold growth and affect the quality of tempeh. This study aimed to determine the effect of tapioca starch addition on the growth of Rhizopus sp. mycelium, the microscopic characteristics of the mold, and the organoleptic quality of red bean tempeh. This study used four treatments of tapioca starch addition, namely T0 (control, 0%), T1 (5%), T2 (10%), and T3 (15%). Mycelium growth was observed at 24 and 48 hours after incubation, microscopic characteristics were observed using a microscope, and organoleptic tests were carried out on color, aroma, texture, and taste of the tempeh. Mycelium growth data were analyzed using a one-way ANOVA test followed by a Duncan test. The results showed that the addition of tapioca starch significantly affected the mycelial growth of Rhizopus sp., with optimal growth in the T3 treatment (15%), especially after 48 hours after incubation. Microscopically, the mold growth showed typical Rhizopus sp. characteristics, including branched aseptate hyphae, erect sporangiophores, round to oval sporangia, and columella, with no morphological differences between treatments. The addition of tapioca starch also affected the organoleptic quality, with tempeh with added tapioca starch demonstrating better panelists acceptance than the control. Based on the results, the addition of tapioca starch increased mold growth and the quality of red bean tempeh without altering the microscopic characteristics of Rhizopus sp.*

**Keywords:** Red bean tempeh, tapioca starch, Rhizopus sp. mycelial growth, organoleptic quality.