

## HEPATOPROTECTIVE EFFECTS OF POLYSACCHARIDES : A REVIEW

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**ABSTRACT :** Natural polysaccharides are an active ingredient that is easily renewed with biocompatibility and high biodegradability. The role of polysaccharide is very important for understanding in the field of potential bio-composites, nano-conjugates and the pharmaceutical sector. This review article discusses information about the hepatoprotective effect of polysaccharides on liver damage due to exposure to harmful components that originate from the outside. Polysaccharides had various abilities in their physiological activities such as anti-inflammatory, antioxidant, anticancer, anti-diabetic, and anti-proliferative, which could be very helpful in treating liver damage. Polysaccharides were also considered to be in the superior category compared to other polymers, due to their compatibility, activity and biological homogeneity. Antioxidant activity derived from polysaccharides could reduce free radicals caused by the metabolism of hepatotoxins so that it could reduce the levels of liver damage caused by high levels of free radicals. This review also confirms the existence of research conducted using plants and fungi, especially regarding the attributes of hepatoprotective activities in the components of polysaccharides found in plants and mushroom.

**Key words :** Anti-oxidant activity, biomedical activities, metabolism, natural polysaccharides, herbal medicine, oxidative stress.

### INTRODUCTION

Polysaccharides are carbohydrate derivatives that contain chains of monosaccharide subunits with a tight arrangement (Mishra and Monro, 2012; Hoover, 2010). They are generally naturally found in plants, animals and microorganisms. In particular, plant polysaccharides are considered separately due to biological factors and physiological activities such as antioxidant activity, antibacterial activity, anti-proliferative activity, anti-diabetic activity, hyperglycemic activity, immunoregulation, and hepatoprotective (Lovegrove *et al*, 2017; Hayaza *et al*, 2019; Husen *et al*, 2019; Ansori *et al*, 2020; Purwaningsari *et al*, 2020). In addition, high availability and survival of plants can be a major producer for a variety of polysaccharides (Parikka, 2004). However, the potential of polysaccharides from fungi is also often discussed. This is because many studies have succeeded in proving the existence of hepatoprotective effects in

the body of the mushroom, especially by its active ingredient polysaccharides (Soares *et al*, 2013). Alternative medicine has long been used as a therapy for various diseases. This is caused by low cost, easy to get it, and few side effects. Alternative medicine is increasingly popular when many researchers have proven the benefits of active ingredients contained in plants and fungi (Gopinath *et al*, 2018). Many companies are trying to find new medicines derived from plants and medicinal mushrooms. Herbal medicines derived from plants and mushrooms are proven to be able to regenerate liver cells and accelerate the healing process of liver damage.

### Hepatotoxicity in liver

The liver is a large organ that plays an important role in carbohydrate, protein and fat metabolism. It is also a place for collecting metabolic waste products such as ammonia, which will be detoxified. In addition, the liver