

# Polyvinyl Pyrrolidone (PVP) as an Additive in Starch Based Biodegradable Films

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## ABSTRACT

With the increased concern about environmental protection, alternative biodegradable materials from renewable resources for food packaging applications are of interest. In this study, biodegradable films were developed from corn starch, polyvinyl pyrrolidone (PVP), glycerol and water in different combinations using casting technique, followed by drying and peeling. Glycerol and water act as plasticizer in the blend. Since, application of PVP has been mainly found in medical field, it may be a good proposition to investigate its suitability in starch film for food packaging. Result shows that levels of PVP effectively control ( $P < 0.05$ ) the mechanical properties of film. At 0.29% PVP (w/w of blend) tensile strength, puncture strength, puncture deformation, tear resistance and elongation at break increase by 27, 93, 67, 32 and 103% respectively. The effect of the addition of PVP on the water vapour permeability characteristics of the films was determined at 25°C with a relative humidity (RH) of 50%. However, compared to mechanical properties, the water vapour permeability was less sensitive with the concentration of PVP. At 0.29% (w/w) PVP, water vapour permeability increased by 3.97%.

**Keywords:** Biodegradable films, polyvinyl pyrrolidone (PVP), mechanical properties, water vapour permeability.