Volume 4 • Issue 1 • 2022

Mini Review

Journal of Pharmacy and Drug Development

Xanthomonas Campestris-A Brief Overview

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Received: June 28, 2022; **Published:** July 11, 2022

Abstract

Xanthomonas campestris is a Gram-negative bacterium that causes bacterial black spot in tomato, pepper and other few cruciferous plants. It is a bacterium previously isolated from country in Japan 1997. *Xanthomonas campestris*, is seen as the most critical and most harm causing bacterium which is a notable plant pathogen of crucifers, influencing brassicas family all over the planet. However, it also an abundant source of Xanthan gum which has numerous industrial and pharmaceutical applications.

Key Words: *Additive; Fermented yoghurt; Pathovars; Brassicas; Polysaccharide*

Introduction

Xanthomonas campestris is a Gram-negative bacterium that causes bacterial spot disease in tomato, pepper and other few different illnesses in plants [1]. It is a bacterium first isolated from bluegrass in Japan 1997 [2]. Xanthomonas campestris, is viewed as the most significant and most damage causing bacterium which is a well-known pathogen of crucifers, affecting brassicas family around the world [3]. The bacterium Xanthomonas campestris produces polysaccharide at the surface of cell wall through enzymatic assisted reactions [4,5]. The microscopic organisms are found normally on the leaves of brassicas family like cabbage etc [6]. *Xanthomonas campestris* is a rod-shaped bacterium having a place with the family Pseudomonadaceae [7]. This variety incorporates a few pathovars, which are essentially plant microorganisms [8]. The phytopathogen Xanthomonas campestris. has a solitary polar flagellum, which is fundamental for its motility and in light of its genomic DNA homology, its genus has been classified into 20 species [9,10]. Black rot is a *Xanthomonas campestris* mediated infection of cruciferous vegetables, for example, broccoli, brussels sprouts, cabbage, cauliflower, kale, rutabaga and turnip, as well as cruciferous weeds wild mustard etc making them unsuitable for commercial sale [11,12]. Black rot associated symptoms appears over a month after cruciferous vegetables begin to develop [13]. Prominent symptoms include dull, yellow blotched leave edges which later spread into V-formed regions with the wide piece of the "V" at the edge of the leaf and the place of the "V" around the connection point of the leaf to the plant [14]. The V-molded regions are at first yellow, yet at last become brown and necrotic (i.e., dead) in the middle with a yellow boundary or corona [15]. Veins in impacted regions are brown or dark, shaping to a net-like appearance [16].

Afterward, inside stem tissue (xylem) will likewise become brown or dark ultimately leading to plant wilting [17]. A solitary contaminated seed in 10,000 can prompt a serious outbreak of the disease in warm temperatures (around 80°F) and high dampness [18].

Nevertheless, when disease seriousness is low, copper-containing fungicides are applied on cruciferous vegetables that might assist in restricting additional disease development [19]. *Xanthomonas campestris* is also a source of Xanthan gum that is utilized in food, effective thickening and suspending agent for organic product mash and chocolates [20]. To accomplish the ideal surface, consistency, flavor and water control properties Xanthan has ended up being a powerful substance as it ties water to further develop surface, making it simple to pour [21]. Additionally, it is used in baking as it expands the water restricting capacity thus increasing the shelf life of the baked items [22]. Besides Xanthan gum helps with the expansion and air incorporation in batters [23]. The more famous gluten free breads and low-calorie products can likewise be created utilizing Xanthan gum [24]. In beverages, Xanthan sets the foundation of drinks and squashes and assists in the suspension of beverages containing particles of food mash improving its appearance and texture [25]. On the other hand, Xanthan gum mixed with carrageenan, LBG, galactomannans form a stabilizer for milk items like frozen yogurt, fermented yogurts milk shakes etc [26]. he security to acids and salt makes Xanthan gum a profoundly successful stabilizer for pourable serving of mixed greens dressings [27]. It works on the thickness, somewhat consistent over an extremely wide temperature range and furthermore has freeze defrost steadiness [28]. Aside from dressings Xanthan likewise assumes an essential part in making syrups and toppings [29]. Furthermore, Xanthan in mixed with different substances produce a homogenous gelled item for the utilization of tamed pets [30]. Industrial applications of Xanthan include its use in Shampoos, liquid soaps, toothpaste, deodorant gels, fungicides/insecticides formulation, additive in drilling fluids, latex paints, ceiling tile coatings, toiletry cleaners etc [31,32,33]. While pharmaceutical applications of Xanthan include as a stabilizing agent in disease diagnostics, as medicines for diabetes, constipation, dry eye etc [34]. Xanthan gum is readily available in Pakistan for purchase and is used in multiple industries such as in food industry to make fresh, improved baked good [35]. It is retailed at 290pkr and multiple companies like Chiltan pure deal with its marketing [36].

Conclusion

Thus, *Xanthomonas campestris* is a prominent plant pathogen of cruciferous plants but also produce industrially important Xanthan gum

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