

## Winning Against Antibiotic Resistance

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Afsan Farid <sup>1</sup>, Sultan Bahatheq <sup>1</sup>, Hassan Amer. Mandeel <sup>1</sup>, Amr Jijakli

1. Alfaisal University College of Medicine 2.

✉ **Corresponding author:** Afsan Farid, afsanfarid@gmail.com

**Categories:** Infectious Disease

**Keywords:**

**How to cite this poster**

Farid A, Bahatheq S, Mandeel H Amer, et al. (2012) Winning Against Antibiotic Resistance . Cureus 4(10): e432.

### Abstract

Heating Carbohydrate Agar to Create Novel Antibacterial Effective treatment of communicable diseases, including tuberculosis, malaria, and HIV infection, is often hindered by drug resistance because microbes readily mutate to allow resistant forms to emerge through selection pressure when populations are exposed to antimicrobial drugs. Pharmaceutical companies try to keep a step ahead of resistance by supplying new drugs, but their pipelines deliver a scant flow. This proposal seeks to explore novel sources of drugs. Dr. Thomas Butler discovered that carbohydrate agar, derived from seaweed, when heated to around 1500 C, produced an antibacterial substance that was acidic and had a small molecular weight. It needs to be characterized further for its spectrum of antibacterial activity as well as its chemical structure. Research methods of this proposal will be growth of standard strains of bacteria on agar plates and in liquid broth. Antimicrobial substances will be placed into agar, onto nitrocellulose disks, and into broth for observing effects on bacterial growth. Expected outcomes are that antibacterial substances will be found that may have application in treatment of communicable diseases. These carbohydrate derived substances promise to be safe drugs because they come from seaweed that are routinely cooked and ingested by people throughout the world without ill health effects.

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**Published 10/12/2012**

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