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Identification of plant and fungal extracts that exhibit antimicrobial activity against pathogenic bacteria.

According to the Centers for Disease Control and Prevention, there have been more than 2 million people infected with drug-resistant bacteria in the USA resulting in over 23,000 deaths in the past year. The development of new antibiotics and therapies that target pathogenic microbes is critical for preventing mortality caused by drug-resistant bacteria. We previously discovered that extracts of Rhamnus purshiana (bark), Eupenicillium parvum (fungus), and Arctostaphylos uva ursi (leaves) exhibit novel antimicrobial activity toward Staphylococcus aureus. We next wanted to determine whether these extracts would inhibit the growth of other pathogenic bacteria. These extracts were screened against a variety of gram-positive and gram-negative bacteria and exhibited substantial antimicrobial effects against Acinetobacter baumannii and Esherichia coli. A. baumannii has major medical implications due to the sudden emergence of this bacterium in military treatment facilities and the ability of this organism to cause bacteremia, pneumonia, meningitis, urinary tract infections, and wound infections. Due to the recent emergence of multidrug-resistant A. baumannii strains, there is a need for new treatments against this bacterium. The potency of these compounds towards this bacterium is being further investigated in vivo utilizing Galleria mellonella larvae infection models.