New and emerging resistant strains of bacteria are increasing worldwide and present a new and ominous therapeutic challenge. Although 80% of the world currently relies on Western medicine for treating common diseases, medicinal plants offer potential for the development of novel antibacterial therapies. This study surveyed popular medicinal aromatic plants and their essential oils as they pertain to multidrug-resistant (MDR) human pathogens. Seventy-one plant species were selected (based on available medicinal information) and screened for in-vitro antimicrobial efficacy against various bacteria. Plants were identified based on phytochemical analysis of the specific plant part traditionally used as medicine. Out of the 71 plants screened for antibacterial activity, 10 displayed the highest antibacterial activity against the test for MDR strains.

Minimum inhibitory concentrations (MICs) were compared with standard antibiotics (ie, chloramphenicol, ceftazidime) with variable results. Some plants showed excellent antibacterial properties (better than the tested antibiotics), whereas some exerted only moderate, weak, or no effect. Antibacterial activity seemed directly related to the diverse compounds accumulated in the plants (eg, tannins, phenols, polyphenols). Other plants with antimicrobial activity from essential oils (eg, thymol, carvacrol [oregano and thyme], eugenol [clove and cinnamon]) were corroborated.

**Commentary**

Interestingly, the oil fraction extracted from the whole plant in many of this study’s cases was not as effective as the whole plant itself. This could be because certain plant parts carry higher concentrations of the active compound and therefore have to be ingested in whole plant form. The effectiveness of medicinal plants as antimicrobial agents may depend upon the interconnection between whole plant and microorganism, the type of microorganism and their cell wall structure, and dosing of the medicinal plant. Mechanisms of action, practicality of application (orally, topically, or both), and potential for side effects or drug interactions warrant further elucidation.—Heather Troyer, DVM, DACVECC

**Source**


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Renal Tubulopathy from Jerky Treats

More than five years ago, an illness affecting the proximal renal tubules in dogs was reported with increased frequency and seemed related to chicken jerky treats manufactured in China. A retrospective study of 108 cases found most of the affected dogs were toy and small breeds, likely because of increased ratio of treat to body weight. Although the specific toxin has yet to be identified, several characteristic clinical, biochemical, and histopathologic changes were found. A hallmark of proximal renal tubular destruction is glucosuria in the absence of hyperglycemia. The loss of glucose plus water in the urine is thought to be the cause of the polyuria and/or polydipsia that was a common presenting complaint. Other common signs included lethargy, vomiting, and weight loss. Many cases responded to simple cessation of feeding the treats, but most cases (n = 64) required supportive treatment including hospitalization, IV fluid therapy, and prolonged oral supplementation of potassium and phosphorus lost in the urine. Although most dogs survived, 6 died or were euthanized, 2 of which were submitted for full necropsy. Significant histopathologic findings included proximal renal tubular necrosis with regeneration.

**Commentary**

The lack of information regarding the toxic compound has made it difficult to prove an association between the treats and reported illnesses and has prevented the FDA from issuing any specific recalls. In a recent letter from the FDA, veterinarians were urged to report any cases and collect blood, urine, and/or tissue samples wherein treats were fed to animals that develop acute illness. The veterinary community should be vigilant in identifying possible intoxication with detailed patient histories and also be scientific in the approach to possible food-related poisonings by offering a complete systemic evaluation and/or postmortem examination. Consultation with animal poison control centers, state agricultural departments, and the FDA is the best way to access the most current information identifying potential food-related intoxications.—Elke Rudloff, DVM, DACVECC

**Source**
