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Review Article

ALPINIA GALANGA: AN OVERVIEW AND HERBAL INTERACTIONS

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Abstract
Medicinal plants and derived medicine are widely used in traditional cultures all over the world and they are becoming increasingly popular in modern society as natural alternatives to synthetic chemicals. *Alpinia galanga willd.* (family- zingiberaceae) commonly known as galanga, is an important cultivated medicinal crop of India. Herbal medicine consists active ingredients in crude form or as an isolated chemical constituent by various processes. Herbal medicine widely perceived by the public too, but adverse effect include important inhibition with conventional medicine occurs. The present paper is an overview on phytopharmacological properties of the plant and its herbal interactions.

Keywords: *Alpinia galanga*, herbal and interactions.

Introduction

India has centuries old and rich heritage of medicinal & aromatic plant due to diversity in environment for curing human illness. Medicinal plants are the only easily accessible health care alternative for most of our population and traditional medicines remained a part of our integral health system[1].

Plant and plant products are being used as a source of medicine since long. *Alpinia galanga willd.* (family- zingiberaceae) is used in medication, culinary and cosmetics for centuries[2].

Herbal medicine is chemically rich complex mixture containing several hundreds of constituents. The profile of constituents is not uniform throughout a plant, and for many plants only a specific plant parts, such as roots or leaves is used medicinally[3].

Adverse drug reaction is a significant cause for morbidity and mortality. It may be defined by the WHO as any response which is undesirable or unintended and occurs in doses ordinary employed for the prophylaxis, diagnosis or treatment. No drugs produce a single effect which can be utilized therapeutically. Adverse drug reaction should be confined to those reaction which are harmful or unpleasant and necessities withdrawal of the drug or reduction of its dose, and or forecast hazards from the future administration[4].

Plant introduction

Alpinia galanga is also known as Greater galangal in English and Kulanjan in Hindi. Most of the South Indian physicians of traditional Ayurveda and Siddha medicine system use Alpinia
galanga to treat various kinds of disease including diabetes mellitus[5]. The optimum time for harvesting *Alpinia galanga* was determined in Kerala, India during 1995-1999. Treatments consisted of harvesting at 3 month-intervals from 6 to 48 months after planting[2]. Harvesting the crop at 42 months after planting was the best for realizing maximum rhizome (45.4 t/ha) and oil (127.4 liters/ha) yields, and for obtaining oil of good quality (27.1% cineole [eucalyptol]). A substantial quantity of oil (127.4 liters/ha) was obtained from the roots (19.5 t/ha) 39 months after planting. The shoot yield (40.5 t/ha) and shoot oil yield (70.61 h/a) were highest at 18 months after planting. A. galanga reached a maximum height of 129.4 cm with more than 48 tillers per clump and 13 leaves per tiller in the experimental location[6].

Taxonomy

Kingdom - Plantae
Order - Zingiberales
Family - Zingiberaceae
Subfamily - Alpinioideae
Tribe - Alpinieae
Genus - Alpinia
Species - A. galanga

Geographical Distributions

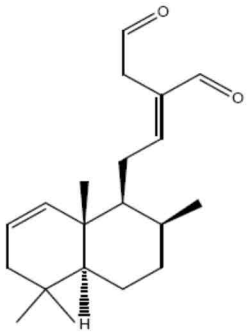
The plant is distributed in Himalaya and Southern region of Western Ghats in India. It is often cultivated in Konkan and North Kanara[7].

Morphology

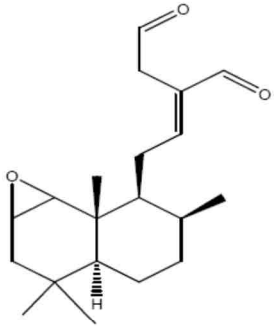
Alpinia galanga is commonly known as Greater galangal. Its root stocks are tuberous and
slightly aromatic, Leaves are oblong-lanceolate, acute, glabrous, green above, paler beneath,
with slightly callus white margins, sheaths are long and glabrous, ligule are short and rounded. Flowers greenish white, in dense flowered, 30 cm Panicles; bracts ovate-lanceolate. Calyx tubular, irregularly 3-toothed. Corolla lobes oblong, claw green, blade white, striated with red, rather more than 1 cm long, broadly elliptic, shortly 2-lobed at the apex, with a pair of subulate glands at the base of the apex, with a pair of subulate glands at the base of claw. Fruit the size of the small cherry, orange red[7].

Phytochemistry

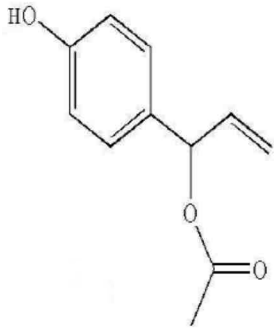
Chemical investigations of *Alpinia galanga* includes galango flavonoid, 1'S-1'-acetoxychavicol acetate (ACE), phenylpropanoids and phydroxybenzaldehyde (1'S-1'-acetoxychavicol acetate and 1'S-1'-acetoxyeuginol acetate), acetoxycineoles (trans and cis)-2-and 3-acetoxy- 1, 1, 8-cineoles, 1'-acetoxychavicol acetate (galangal acetate), β-Sitosterol diglucoside (AG-7) and β-sitsteryl Arabinoside (AG-8), hydroxy-1,8-cineole glucopyranosides, (1R, 2R, 4S)-and (1S, 2S, 4R)-trans-2-hydroxy-1,8-cineole β-D-glucopyranoside, and (1R, 3S, 4S)-trans-3-hydroxy-1, 8-cineole β-D-glucopyranoside[8,9,10].



12-labddien-15,16-dial



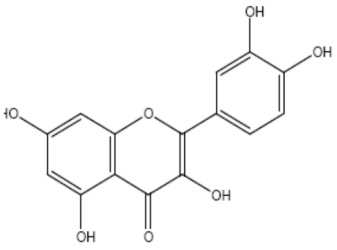
(17)-epoxylabd-12-en-15,16-dial



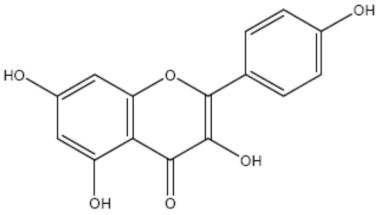
1'-hydroxychevicol acetate

Pentadecane

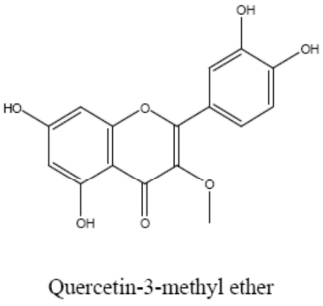
7-heptadecane



Quercetin



Kaempferol



Quercetin-3-methyl ether

Traditional Uses

The rhizome of the plant is used as carminative, digestive tonic, anti-emetic, anti-fungal, antitumor, Anti-helmintic, anti-diuretic, anti-ulcerative, anti-dementia[5]. The extract of rhizome shows anti-tubercular activity, hypothermia, bronchial catarrh, tonic, stomachic and stimulant[7]. It is also used as pungent, bitter, heating, stomachic, improve appetite, disease of heart, aphrodisiac tonic, expectorant, use in heal, ache, lumbago, rheumatic pains, chest pain, diabetes, burning of liver, kidney disease, disinfectants. The rhizome is also used as anti-microbial, anti-bacterial, anti-inflammatory and flavoring agent[11].

Pharmacological Action

Alpinia galanga possess following pharmacological activities: anti-

inflammatory and analgesic activity[12], hypoglycemic activty[13], antimicrobial activity[14], antiplatelet activity[15], hepatotoxicity, Anti- HIV, Immunomodulator and Anti-Oxidant[7].

Alpinia/ drug interactions

- **Antacids:** Alpinia increases stomach acid Alpinia might decreases the effectiveness of antacids[19].
- **Antidiabetic agents:** one animal study reported that Alpinia may decrease glucose concentration[16].
- **Antihypertensive drugs:** small reduction in systolic and diastolic blood pressure have been associated with the use of Alpinia in human and animal studies[17, 18 and 19].
- **Diuretics:** a slight increase in diuresis was observed in two human studies following the administration of Alpinia speciosa[18, 19].
- **H2-blockers** Theoretically, due to reports that alpinia increases stomach acid, alpinia might decrease the effectiveness of H2-blockers[19].
- **Proton pump inhibitors (PPIs):** Theoretically, due to reports that alpinia increases stomach acid, alpinia might decrease the effectiveness of proton pump inhibitors[19].

Alpinia/Herb/Supplement Interactions:

- **Diuretics**: A slight increase in diuresis was observed in two human studies following the administration of Alpinia speciosa. However, there is contradictory pharmacologic evidence suggesting alpinia's anti-diuresis effects as well[18, 19, and 21].
- **Hypoglycaemics:** One animal study reported that alpinia may decrease glucose concentrations. Theoretically, an additive effect with hyperglycemic herbs may occur[16].
- **Hypotensives**: Small reductions in systolic and diastolic blood pressure have been associated with the use of alpinia in human and animal studies. Theoretically, additive effects may occur[17, 18 and 19].

Alpinia/Lab Interactions:

- **Red blood cell levels**: One animal study reported that alpinia may elevate red blood cell levels[20].
- **Serum glucose levels**: One animal study reported that alpinia may decrease glucose concentrations[16].

Conclusion

There is no doubt that useful new drugs will evolve from the investigation of herbal remedies and this indeed, is history repeating itself. Despite the problems noted above, clinical evidence of efficacy has been obtained for *Alpinia galanga*. *Alpinia galanga* is important medicinal plant with diverse pharmacological spectrum. The plant shows the presence of many chemical constituents which are responsible for varied pharmacological and medicinal property.

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