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A COMPARATIVE ANALYTICAL STUDY OF DIFFERENT EXTRACTS OF KATUKI (Picrorhiza kurroa).

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Abstract:

Katuki is cited as an important remedy by Jivek, Charak and Vagbhatt in ancient Ayurvedic literature It belongs to Scrophulariaceae family. This is a large plant family, with around 200 genera and 3000 species, mainly found in the northern temperate regions of the world. Different extracts of rhizomes of katuki were evaluated for its different therapeutic activities. In panchvidha Kashaya Kalpana, only aqueous extract are prepared. In present study the aqueous and alcoholic extracts are evaluated analytically. The aqueous and alcoholic extract is evaluated wsr to alkaloid, glycosides, proteins, TLC. The obtained values are compared statistically. Analytical parameters of aqueous extract of rhizome of katuki shows better values as compared to alcoholic extract. So, katuki shows better therapeutic values when it as used as pancha vidha Kashaya

Keywords: Katuki, Analytical study, Panchavidha kashaya kalpana

Introduction: Katuki (Picrorhiza kurroa Royle ex Benth) is cited as an important remedy by Jivek, Charak and Vagbhatt in ancient Ayurvedic literature Indian Pharmacopoeia also listed katuki as an official drug. The plant has been described as very useful in jaundice, nausea anorexia, dyspepsia and periodic fevers.

Taxonomy and Morphology

The complete botanical name is Picrorhiza kurroa Royle ex Bentham. It has got two synonyms i.e. Picrorhiza lindleyana (Wall.) Steud. and Veronica lindleyanaWall.

In Greek 'picros' means bitter and 'rhiza' means root. The specific epithet of the plant is taken from the Punjabi name of the plant 'karu' which means bitter.

plant "Karu", which means bitter.

Vernacular names being used for P. kurroa include Balakadulen, Hellebore, hohwangryun, honglen, hunglen, honkadu, huhuanglian, kadu, kadukrohini, kadugurohini, kalikutki, karupicrorhiza, karru, katki, katu, katuka, Karukarohini, katukaa, Kaurohini, Kavi, Kauka, katuka, katukarohini, katukarogani, katukarohini, katuki, katuko, katukurohini, katurohini, katvi, kaur, khanekhaswael, kharbaqe-hindi, kotkaanphraao, koouren, kotkaanphraao, kour, kurri, kuru, kutaki, kutki, kutta, rohini, sutiktaka, tiktarohini, Tikti, xi zanghuhuanglian.

Morphological and Taxonomic Features

Picrorhiza kurroa Royle ex Benth. belongs to Scrophulariaceae family. This is a large plant family, with around 200 genera and 3000 species, mainly found in the northern temperate regions of the world. Scrophulariaceae includes the plants such as popular garden plants (including tiny alpines); and also some other plants grown for their aesthetic value (include Penstemon, Mimulus and Calceolaria).

Kutki is a perennial herb with an elongated rhizome. The leaves are basal and alternate, approximately 5–10 cm long (Figure 1). Terminal Spikes are present. Calyx divide equally in 5 parts. The corolla has 4 or 5 lobes, 4–5 mm long, bilobate with lobes more or less spreading or nearly actinomorphic. Stamens 4, inserted on corolla tube, slightly didynamous. Stigma capitate. Fruit an acute capsule, tapered at top, dehiscing into 4 valves, 12 mm long. Seeds numerous, ellipsoid: seed coat very thick, transparent. Pollen grains round, tri-colpate, with incomplete or perforate tectum, the partial tectum micro-reticulate, colpus membrane smooth or occasionally coarse.

Rhizome is 2.5–12.0 cm long and 0.3–1.0 cm thick, sub-cylindrical, straight or to some extent curved, externally greyish-brown, external surface is coarse due to longitudinal furrows and spherical scars of roots, tip ends in a growing bud enclosed by a crown of leaves (Figure 2). Root is elongated, tubular, 5–10 cm in length and 0.5–1.0 mm in diameter, straight or marginally curved with a few longitudinal and dotted scars, mostly associated with rhizomes.

The anatomy of rhizome shows 20–25 layers of cork consisting of tangentially extended, suberized cells; 1–2-layered cork cambium; cortex single layered or not present, main cortex continues in some cases, 1 or 2 small sized vascular bundles (xylem and phloem) present in the cortex. Vascular bundles are surrounded by fibrous bundle sheath.

Secondary phloem is made up of parenchyma cells and a few dispersed fibers. 2–4 layered thick cambium is present. Secondary xylem consists of tracheids, vessels, fibers and parenchyma cells. Vessels vary in size and shape, tracheids long, thick walled,lignified, more or less cylindrical with blunt pointed ends. Starch grains are abundantly present, 25–105 µm in diameter.

Anatomy of root shows when root is young, it shows single layered epidermis, some epidermal cells stretch forming unicellular hairs.

Hypodermis is single-layered. Cortex 8–14 layered, consisting of ovoid to polygonal,

thick-walled parenchymatous cells. Primary stele, tetrarch to heptarch, enclosed by a single-layered pericycle and single layered thick-walled cells of endodermis. Mature

roots show 4–15 layers of cork, 1–2 layers of cork cambium. Vessels vary in size and

shape, some tubular with tail-like, tapered ends; some barrel shaped with perforation o

Different extracts of rhizomes of katuki were evaluated for its different therapeutic activities. In panchvidha Kashaya Kalpana, only aqueous extract are prepared. In present study the aqueous and alcoholic extracts are evaluated analytically.

Material and methods:

Preparation of herbal extracts

The rhizomes were taken from open market sample. The air dried plant material was finely powdered and stored at 4°C. A known quantity of finely powdered sample was weighed into a 250ml conical flask and subjected to sequential cold extraction using methanol and water as extraction solvents while stirring at room temperature. Contents of the flask were squeezed through muslin cloth and the filtrate from aqueous extract was

filtered using whatman filter paper. The extraction process was repeated thrice (2–3h stirring each time). The extracts from each of the sample were evaporated under reduced pressure to give residues in different amounts.

The aqueous and alcoholic extract is evaluated wsr to alkaloid, glycosides, proteins, TLC. The obtained values are compared statistically.

Results:

Sr. No.	Parameter	Aqueous extract	Alcoholic extract
1	Alkaloid	+++	++
2	Glycosides	++	++
3	Protein	+++	++
4	Tanins	+	+

Conclusion:

Analytical parameters of aqueous extract of rhizome of katuki shows better values as compared to alcoholic extact. So, katuki shows better therapeutic values when it as used as pancha vidha Kashaya Kalpana as described in ancient ayurvedic classics.

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