RESEARCH PAPER

# A Quantitative Analysis of Fodder Plants Used in Livestock Healthcare in the Bilaspur District of Chhattisgarh, India

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***ABSTRACT***

Ethnoveterinary practices are vital for livestock health care. The goal of the current research was to document and characterize the ethnoveterinary fodder plants utilized for livestock healthcare by the people in the Bilaspur District of Chhattisgarh state of India. In this study a total of 75 informants were interviewed in a semi-structured way for an ethnoveterinary study. Information was collected regarding their uses, preparation methods, dosage, routes of administration, and conservation status. Quantitative ethnobotanical indices (UV, RFC, FL, FIV and ICF) were used to assess the cultural importance of the documented species.

A total of 45 species belonging to 18 families and 40 genera were recorded. The main method of preparation was paste and both oral and topical administration. The most important quantitatively were *Acacia nilotica*, *Azadirachta indica*, *Madhuca longifolia*, *Cynodon dactylon* and *Anogeissus latifolia*. The study constitutes the first quantitative list of ethnoveterinary fodder plants and phytochemical and pharmacological studies. It helps maintain indigenous knowledge and enables the development of sustainable healthcare using herbs in veterinary medicine under the One Health approach.

**Keywords:** Ethnoveterinary practice, Fodder plant, Indigenous knowledge, Quantitative ethnobotany, Livestock healthcare, One Health.

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## Introduction

Ethn.ovet.erinary medi.cine (EVM) is an ess.en.tial part of tra.dit.ion.al med.ic.ines for anim.als, used esp.ec.ial.ly in rur.al com.mun.iti.es and ind.ig.eno.us gro.ups in dev.el.opi.ng nati.ons rely.ing on pla.nts that are read.ily ava.il.able in the.ir loc.al env.iro.nme.nts for the pre.ve.nti.on and tre.at.ment of ani.mal dise.ases (Kura.lkar and Kura.lkar, 2021; Buss.mann et al. 2025; Fer.ná.ndez-Lla.ma.zar.es et al. 2024). For the rural people the livestock is the significant source for the household income like draught power, milk, meat, and manure production s well as in agricultural sustainability (Si.ngh et al. 2022). Alth.ough the kno.wl.edge of vet.er.ina.ry med.ic.ines has gro.wn over the yea.rs, with the cost of syn.th.etic med.ic.ines goi.ng up, the dev.elo.pme.nt of anti.mic.rob.ial res.is.tan.ce and the abse.nce of vet.er.ina.ry serv.ices in rem.ote are.as, rese.arch on tra.dit.ion.al pla.nt.-ba.sed hea.lt.hca.re sys.tem (Kura.lkar and Kura.lkar, 2021; Coa.ls et al. 2024) has bec.ome more rele.vant now. Thus, the docu.men.tat.ion of ind.ig.enous ethn.ovet.erin.ary kno.wl.edge has emer.ged as an imp.or.tant foc.us of rese.arch to supp.ort

sus.tai.nab.le liv.es.tock pro.du.cti.on and bio.div.ers.ity con.ser.vat.ion (Bus.sma.nn et al. 2025; Fer.ná.ndez-Lla.ma.zar.es et al. 2024).

Ethn.ovet.erin.ary fod.der pla.nts are one of the dive.rse bot.an.ical res.ou.rces bei.ng used for tra.dit.ion.al ani.mal hea.lth care, whi.ch comb.ines nut.rit.ion.al and the.rap.eut.ic pro.pe.rti.es (Um.airet al. 2024; Oda et al. 2024). Many fod.der spec.ies also poss.ess anti.mic.rob.ial, ant.iox.ida.nt, anti.-inf.lamma.tory, anti.par.asi.tic and wou.nd heal.ing pro.pe.rti.es as a res.ult of the.ir bioac.tive sec.on.dary met.abo.lit.es whi.ch help in enh.an.cing the hea.lth of liv.es.tock (Kura.lkar and Kura.lkar, 2021). The pla.nts are also popu.lar with farm.ers for the.ir nut.rit.ion.al val.ue and for con.ta.ini.ng act.ive com.po.unds with imm.une-.boos.ting, anti-parasitic, and digestive characters which utilize to prevent the various diseases in livestock (Pal et al. 2024; Oda et al. 2024). Ind.ig.enous kno.wl.edge (IK) is also con.tri.but.ing in the man.ag.eme.nt of liv.es.tock res.ou.rces, whi.ch is ben.ef.ici.al and also redu.ces the need for com.me.rci.al vet.er.ina.rymedi.cine (Um.airet al. 2024). In rec.ent tim.es, Asia, Afr.ica and Sou.th Amer.ica have also been wit.ne.ssi.ng the imp.or.tant role of fod.der pla.nts in tra.dit.ion.al vet.er.ina.ry medi.cine and the.ir pot.en.tial to be dev.el.oped into phytopharmaceuticals (Oda et al. 2024; Gon.ça.lveset al. 2025; Uma.ir et al. 2024).

In the past yea.rs, ethn.ovet.erin.ary rese.arch has been inc.rea.sin.gly focu.ssed on qua.nti.tat.ive ethn.obo.tani.cal rese.arch meth.ods to impr.ove the sci.en.tif.ic inte.rpr.etat.ion of TK (Le.onti, 2024; Mandal and Rahaman, 2022). Bas.ed on the pla.nt's cult.ural imp.or.tan.ce, inf.or.mant con.se.nsus and prio.rity for phyt.och.emi.cal and phar.maco.logi.cal rese.arch, indi.ces like Use Val.ue (UV), Rela.tive Fre.qu.ency of Cita.tion (RFC), Fide.lity Lev.el (FL), and Inf.or.mant Con.se.nsus Fac.tor (ICF) were used to meas.ure the pla.nts' cult.ural val.ue and inf.or.man.ts' agr.ee.ment (Mandal and Rahaman, 2022). The.se indi.ces can be cor.re.lat.ed with the tra.dit.ion.al kno.wl.edge docu.men.tat.ion, have val.ue in com.pa.ris.on with the tra.dit.ion.al kno.wl.edge of dif.fe.rent regi.ons and may be used to gui.de the con.ser.vat.ion of med.ic.inal pla.nt res.ou.rces bas.ed on evid.ence, which is the common ethnoveterinary practice worldwide (Le.onti, 2024; Are.mu et al. 2024).

India is one of the richest traditions of ethnoveterinary medicine (Kuralkar and Kuralkar, 2021); with outstanding floral diversity of ethnoveterinary medicine practices. A lot of researchers reported a large number of medicinal plants utilized in the treatment of several livestock diseases while fodder plants have limitation in the ethnoveterinary practices (Pal et al. 2024; Ral.teet al. 2024). The Chh.att.isg.arh sta.te in cent.ral Ind.ia is not.ed as one of the bio.div.ers.ity rich sta.tes of the coun.try with lar.ge tri.bal pop.ul.ati.on and tri.bal com.mun.iti.es like Gond, Bai.ga, Ora.on, Kan.war and Binj.hwar with over 44% geo.gra.phi.cal area und.er for.est cov.er. The sta.te is home to a vari.ety of trop.ical dec.id.uous fore.sts, lar.ge tra.cts of graz.ing lan.ds and abun.dant var.ie.ties of fod.der and medi.cine pla.nts whi.ch have been feed.ing the rur.al liv.eli.hoo.ds in the sta.te. Agr.icu.ltu.re and ani.mal hus.ba.ndry are sig.nif.ica.nt pill.ars of sta.te's econ.omy and are mos.tly pra.ct.iced in the tra.dit.ion.al sys.tem rear.ing cat.tle, buf.fa.loes, goa.ts and she.ep with the tra.dit.ion.al produ.ction sys.tem whi.ch mai.nly rel.ies on the ind.ig.eno.us fod.der res.ou.rces and ethnovet.erinary hea.lt.hca.re syst.ems (Si.nghet al. 2022; Kura.lkar and Kura.lkar, 2021).

The Bila.spur Dist.rict of Chh.att.isg.arh is uni.que in ter.ms of fert.ile pla.ins, fore.sts and a good mix of agr.icu.ltu.ral land, vill.age lan.ds.cap.ed lan.ds and natu.ral graz.ing lan.ds whi.ch prov.ide year rou.nd fod.der. Rear.ing of liv.es.tock is part of the rur.al econ.omy and loc.al com.mun.iti.es also have rich ind.ig.eno.us kno.wl.edge on how to use pla.nts as fod.der as well as for med.ic.inal purp.oses. Alth.ough the.re is gre.at bio.cul.tur.al wea.lth in the reg.ion, most of the prev.ious work done in this area has been on hum.an ethn.ome.dic.ine or gene.ral ethn.obo.tani.cal docu.men.tat.ion with.out con.sid.eri.ng the dual nut.rit.ion.al and the.rap.eut.ic val.ue of ethn.ovet.erin.ary fod.der pla.nts. Hen.ce, the.re is sti.ll a need to docu.ment and inv.est.iga.te the ethn.obo.tani.cal asp.ect (qu.ant.itat.ive tra.dit.ion.al use val.ues) of ethn.ovet.erin.ary fod.der pla.nts sys.tem.ica.lly in Bila.spur Dist.rict, if the.re is any uti.liz.ati.on of them (Pa.tra and Sha.rma, 2022).

The pres.ent stu.dy was par.tic.ula.rly aim.ed towa.rds rec.or.ding the pla.nt spec.ies, the par.ts used, liv.es.tock dise.ases trea.ted, the met.hod of pre.par.ati.on, dose, rou.te of admi.nis.trat.ion and the rela.tive imp.or.tan.ce of the pla.nts with the fol.lo.wing indi.ces nam.ely Use Val.ue (UV), Rela.tive Fre.qu.ency of Cita.tion (RFC), Fide.lity Lev.el (FL), Inf.or.mant Con.se.nsus Fac.tor (ICF), and Fam.ily Imp.or.tan.ce Val.ue (FIV). The resu.lts will help in the con.ser.vat.ion of Ind.ig.eno.us Kno.wl.edge, sus.tai.nab.le liv.es.tock hea.lth care, and dete.rmi.nat.ion of

poten.tial pla.nt spec.ies for fut.ure phyt.och.emi.cal, phar.maco.logi.cal, and con.ser.vat.ion stud.ies (Le.onti, 2024; Buss.mann et al. 2025; Kura.lkar and Kura.lkar, 2021).

**Materials and Method**

**Study area**

The pres.ent stu.dy was carr.ied out in Bila.spur Dist.rict of Chh.att.isg.arh, Ind.ia whi.ch rep.re.sen.ts lan.ds.cape of agr.icu.ltu.re, natu.ral veg.et.ati.on, vill.age comm.ons, graz.ing lan.ds and rur.al agr.icu.ltu.re dep.en.dent on liv.es.tock. Agr.icu.ltu.re and ani.mal hus.ba.ndry are also part of the liv.el.iho.od act.iv.iti.es that are imp.or.tant in the Dist.rict, with loc.al com.mun.iti.es also usi.ng loca.lly ava.il.able wild and cul.ti.vat.ed pla.nts to feed the.ir anim.als and prov.ide tra.dit.ion.al care.

In ord.er to get repr.ese.ntat.ive geo.gra.phi.cal cove.rage, all four dev.elo.pme.nt blo.cks of Bila.spur Dist.rict, nam.ely Bel.ha (Bi.lha), Kota, Mast.uri and Tak.ha.tpur were cove.red dur.ing ethn.ovet.erin.ary sur.vey. The.re were 20 vill.ages that were sele.cted, five vill.ages per blo.ck. This sel.ec.tion of vill.ages were Cha.kar.bha.tha, Ame.ri.kapa, Ata.rra, Bha.rw.idih, Lofa.ndi from Bel.ha; Belg.ahna, Ken.da, Chap.ora, Bha.is.ajh.ar and Kar.gi Khu.rd from Kota; Gata.ura, Jai.ram Nag.ar, Loha.rsi, Jond.hra and Kir.ari from Mast.uri; and Sak.ri, Gani.yari, Khar.kena, Moh.ta and Bel.pan from Tak.ha.tpur. The stu.dy sit.es were cho.sen to refl.ect the div.er.sity pres.ent in ter.ms of fod.der pla.nt res.ou.rces, liv.es.tock hus.ba.ndry and rela.ted tra.dit.ion.al ethn.ovet.erin.ary kno.wl.edge thr.ou.gho.ut the Dist.rict in rur.al are.as. The ill.ust.rat.ion of stu.dy area is pre.se.nted in the Fig.ure 1.

Figure 1 shows the topography of research area on a map. ArcGIS Pro version 3.4.0 software was used to make this map using GPS data from the research area.

**Data collection**

The ethn.ovet.erin.ary sur.vey was carr.ied out in 20 vill.ages in 2026 in the four dev.elo.pme.nt blo.cks of Bila.spur Dist.rict in Chh.att.isg.arh, Ind.ia. Purposive sampling was utilized to choose informants with substantial knowledge of livestock husbandry, local fodder resources, and customary animal health care procedures. A total of 75 informants were interviewed, including farmers, livestock owners, traditional healers, ethnoveterinary practitioners, and other informed community members. The communities nominated the informants based on their knowledge of local fodder plants, involvement in folk medicinal practices, and farming expertise with cattle.

Primary data was gathered primarily through semi-structured interviews, open-ended talks, group discussions, pre-designed questionnaires, and direct field observations. The int.er.vie.ws have been carr.ied out in the loc.al lang.uage that is unde.rst.anda.ble to the int.erv.iew.ees, so that eff.ec.tive comm.uni.cat.ion and accu.rate docu.men.tat.ion of tra.dit.ion.al kno.wl.edge can be done. Soci.o-de.mogra.phic data of inf.or.man.ts such as gen.der, age, edu.ca.tion, occ.up.ati.on, farm ani.mal rear.ing exp.er.ien.ce and sour.ces of ethn.ovet.erin.ary kno.wl.edge were also col.le.cted.

The fol.lo.wing data were reco.rded for each pla.nt spec.ies repo.rted: loc.al name, part used as feed, med.ic.inal part used, spec.ies used by liv.es.tock, ethn.ovet.erin.ary use, liv.es.tock illn.ess, pre.par.ati.on, oth.er ing.red.ien.ts, dose, fre.qu.ency, rou.te of use, dura.tion of tre.at.ment, per.ce.ived effe.cti.ven.ess, ava.ila.bil.ity, and sou.rce habi.tat. The pla.nt spec.ies with dual use as fod.der for liv.es.tock and tra.dit.ion.al ethn.ovet.erin.ary dru.gs rece.ived spec.ial att.en.tion.

The inf.orm.ati.on gai.ned from ind.iv.idu.al int.er.vie.ws was cor.rob.ora.ted by dis.cus.sio.ns with oth.er wel.l-i.nfor.med inf.or.man.ts and whe.re poss.ible, thro.ugh fie.ld obs.erv.ations. Int.er.vie.ws were con.ti.nued unt.il the sat.ur.ati.on poi.nt for inf.orm.ati.on (addi.tio.nal int.er.vie.ws did not yie.ld sig.nif.ica.nt add.it.ion.al inf.orm.ati.on abo.ut pla.nt spec.ies or ethn.ovet.erin.ary uses). In this way, the doc.um.ent.ed Knowl.edge has been made more con.si.ste.nt and reli.able, whi.le sti.ll bei.ng cul.tu.ral.ly and con.tex.tua.lly spec.ific as in an ethn.obo.tani.cal stu.dy.

**Collection and identification of plant specimens**

Ethn.ovet.erin.ary sur.vey was carr.ied out in the sele.cted stu.dy are.as and pla.nt spe.ci.mens were col.le.cted with the help of info.rmed inf.or.man.ts. Spe.ci.mens were col.le.cted at flo.we.ring or frui.ting sta.ges when.ever poss.ible, to ens.ure accu.rate tax.on.omic iden.tif.icat.ion. Prior to collection, field photos were taken, and pertinent details were noted, including the local name, habitat, occurrence (wild or cultivated), and related traditional use.

With the assistance of taxonomists from the Department of Botany at C. V. Raman University in Kota, Bilaspur, Chhattisgarh, as well as standard regional and national floristic literature like Flora of Madhya Pradesh, Vol. III (Singh et al. 2001) and Flora of British India (Hooker, 1885), the collected plant material was taxonomically

identified. The bot.an.ical nam.es, aut.hor cit.at.ions and tax.on.omic sta.tus of all the spec.ies were then veri.fied from the Pla.nts of Wor.ldOnl.ine (POWO) data.base, Roy.al Bota.nic Gard.ens, Kew data.base. A tot.al of 45 spec.ies of ethn.ovet.erin.ary fod.der pla.nts were doc.um.ent.ed in the pres.ent inve.sti.gat.ion, whi.ch were sub.seq.uently taxo.nom.ica.lly ide.nt.ifi.ed that for.med the fin.al anal.ysis.

**Quantitative ethnobotanical analysis**

**Use value**

The Use Val.ue is cal.cu.lat.ed by the fol.lo.wing form.ula of the rela.tive sig.nif.ica.nce of pla.nt spec.ies:

$UV=(\sum Ui)/N$

In whi.ch 'Ui' is the num.ber of cit.at.ions acr.oss all of the res.pon.den.ts of the spec.ies, and N is the num.ber of res.pon.den.ts (Phillips and Gentry, 1993; Vita.lini et al. 2013).

**Relative Frequency Citation**

Relative Frequency Citation (RFC) was used to determine how many therapeutic fodder plants were most frequently employed in the chosen regions to treat a variety of ailments.

$RFC = FC/N \ (0<RFC<1)$

Where, FC= frequency of citation of plant, N= No. of respondent (Tardío and Pardo-de-Santayana, 2008).

**Fidelity level**

The pro.po.rti.on of res.pon.den.ts who men.ti.oned the usa.ge of the pla.nt spec.ies pres.ent in the giv.en site to tre.at a giv.en dise.ase is cal.led the Fide.lity Lev.el and is cal.cu.lat.ed as foll.ows.

$FL=Np/N.\times100$

In whi.ch 'Np' is defi.ned by the ind.iv.idu.al Num.ber of cit.at.ions rela.ted to a giv.en ailm.ent, and N is the tot.al num.ber of inf.or.man.ts who men.ti.oned the spec.ies for a par.ti.cul.ar dise.ase (Friedman et al. 1986).

**Informant consensus factor**

The Inf.or.mant Con.se.nsus Fac.tor (ICF) was asse.ssed to ass.ess the wil.lin.gne.ss of the inf.or.man.ts to use the pla.nt spec.ies to tre.at vari.ous dise.ases.

$FCI=N_{ur}-N_t/N_{ur}-1$

Whe.re we can rep.re.sent the num.ber of pla.nt spec.ies or taxa used to tre.at that cate.gory of dise.ases as '$N_t$', and the num.ber of use-r.epo.rts of that spec.ies of inf.or.mers as '$N_{ur}$'. The ran.ge of ICF val.ue is (0, 1). In whi.ch 1 is the high.est quan.tity of the res.pon.den.ts and 0 is the lea.st poss.ible num.ber of the res.pon.den.ts (Hei.nri.ch et al. 1998).

**Family Importance Value**

The value of families was assessed using the Family Importance Value (FIV). The following method was used to determine the percentage of informants who referenced the family (Phillips and Gentry, 1993; Ferreira et al. 2009).

$FIV\ \% = FC_{family}/N\times100$

Where, $FC_{family}$= No. of respondents cited the family, N= total no. of respondents in the whole survey.

**Statistical Data Analysis**

Eth.nog.rap.hic data gath.ered in the ethn.ovet.erin.ary sur.vey were comp.iled and org.an.ized on the soft.ware Mic.ro.soft Exc.el 2016 (Micr.oso.ft Cor.por.ati.on, Redm.ond, WA, USA). Dem.ogr.aph.ic data on inf.or.man.ts and ethn.ovet.erin.ary plan.t-use data were anal.yzed. The data anal.yzed were org.an.ized in tabu.lar and gra.ph.ical for.ms to make easy inte.rpr.etat.ion of the data.

**RESULTS**

**The socio-demographic data of informants.**

The 75 informants who took part in the survey provided 81 ethnoveterinary reports (Table 1). Of the responders, 30.67% were women and 69.33% were men. The age group with the highest percentage of responders was 41–50 years old (29.33%), followed by 51–60 years old (24.00%) and 31–40 years old (18.67%). Edu.ca.tion wise, 46.67% of the res.pon.den.ts were ill.it.era.te, 24.00% got prim.ary edu.ca.tion. Farm.ers made up the larg.est gro.up of occ.up.ati.on (32.00%), with tra.dit.ion.al heal.ers at 24.00%, liv.es.tock keep.ers at 16.00% and ethn.ovet.erin.ary prac.tit.ion.ers at 12.00%).The res.pon.den.ts who had exp.er.ien.ce in livestoc.k-rearing ran.ged from 34.67% with 21-30 yea.rs to 29.33% with 10-20 yea.rs and 21.33% with >30-.year exp.er.ien.ce. Ethn.ovet.erin.ary kno.wl.edge

was most fre.qu.ent.ly men.ti.oned by the gra.ndp.are.nts (37.33%), pare.nts (24.00%), tra.dit.ion.al heal.ers (16.00%), com.mu.nity eld.ers (13.33%) and sel.f-l.earn.ing (9.33%).

**Table 1 Socio-demographic characteristics and distribution of ethnoveterinary reports among informants in the study area of Bilaspur District Chhattisgarh.**

| Variables | Categories | Number (n) | Percentage (%) | Sum of Reports |
|---|---|---|---|---|
| **Gender** | Male | 52 | 69.33 | 57 |
| | Fem.ale | 23 | 30.67 | 24 |
| **Age group (years)** | 20–30 | 6 | 8.00 | 6 |
| | 31–40 | 14 | 18.67 | 14 |
| | 41–50 | 22 | 29.33 | 24 |
| | 51–60 | 18 | 24.00 | 20 |
| | 61–70 | 10 | 13.33 | 12 |
| | >70 | 5 | 6.67 | 5 |
| **Educational level** | Ill.it.era.te | 35 | 46.67 | 39 |
| | Prim.ary | 18 | 24.00 | 18 |
| | Sec.on.dary | 9 | 12.00 | 9 |
| | Hig.her Sec.on.dary | 6 | 8.00 | 6 |
| | Grad.uate | 5 | 6.67 | 6 |
| | Pos.tgr.adu.ate | 2 | 2.67 | 3 |
| **Occupation** | Far.mer | 24 | 32.00 | 25 |
| | Liv.es.tock kee.per | 12 | 16.00 | 13 |
| | Tra.dit.ion.al hea.ler | 18 | 24.00 | 22 |
| | Ethn.ovet.erin.ary pra.cti.tio.ner | 9 | 12.00 | 11 |
| | Oth.ers | 12 | 16.00 | 10 |
| **Experience in livestock rearing** | <10 yea.rs | 11 | 14.67 | 10 |
| | 10–20 yea.rs | 22 | 29.33 | 23 |
| | 21–30 yea.rs | 26 | 34.67 | 30 |
| | >30 yea.rs | 16 | 21.33 | 18 |
| **Source of ethnoveterinary knowledge** | Pare.nts | 18 | 24.00 | 17 |
| | Gra.ndp.are.nts | 28 | 37.33 | 33 |
| | Tra.dit.ion.al hea.ler | 12 | 16.00 | 14 |
| | Sel.f-l.earn.ing | 7 | 9.33 | 6 |
| | Com.mu.nity eld.ers | 10 | 13.33 | 11 |

**Taxonomic composition and growth form**

In the current study, 45 species of ethnoveterinary fodder plants from 21 families and 40 genera were identified from selected villages of Bilaspur District (Table 2 Suppementary data). In terms of taxonomy, all 45 identified species were angiosperms, gymnosperms, pteridophytes, and bryophytes were not recorded. Angiosperms were found in a variety of growth forms, including trees, shrubs, herbs, grasses, climbers, and creeping plants. They contained both woody and herbaceous species.

Among the recorded taxa, Fabaceae (17 species, 37.78%), Combretaceae (4 species, 8.89%), and Moraceae (3 species, 6.67%) were the most prevalent families.Two spec.ies (4.44%) were fou.nd in two fami.lies, the oth.er 15 fami.lies hav.ing only one spec.ies (2.22%). The maj.or data are pre.se.nted in the tab.le 2 and the top 10 fami.lies are pre.se.nted in the Fig.ure 2. The prominent memb.ers of the Faba.ceae were *Aca.cia nilo.tica, Vac.he.llia leu.cop.hlo.ea, Sen.eg.alia cate.chu, Albi.zia lebb.eck, But.ea mon.os.per.ma, Pong.amia pinn.ata, Caja.nus caj.an, Vig.na radi.ata, Vig.na mun.go, Lab.lab pur.pu.reus, Mac.rot.yloma uni.fl.orum, Sesb.ania ses.ban, Gli.ri.cid.ia sep.ium, Muc.una prur.iens, Sen.na tora, Bauh.inia var.ie.gata,* and *Dal.be.rgia sis.soo*.

Gro.wt.h-f.ormanal.ysiswas pre.se.nted in the (Table 2Suppementary data) andFig.ure 3. The data reve.aled the pre.dom.ina.nce of tre.es with 30 spec.ies rep.res.ent.ing 66.67% of the tot.al foll.owed by her.bs with six spec.ies (13.33%). Two spec.ies each were reco.rded for shr.ub./sm.all tre.es, cree.ping her.bs, gras.ses and clim.bers (4.44%) whi.le one spec.ies was reco.rded as shr.ub (2.22%). Some of the tree part res.ou.rces were comm.only repo.rted fod.der tre.es like *Aza.dir.ach.ta ind.ica, Aca.cia nilo.tica, Mori.nga olei.fera, Anogeissus lat.if.olia, Ter.mi.nal.ia arj.una, Dal.be.rgia sis.soo, Syzy.gium cum.ini,* and *Madh.uca lon.gi.fol.ia*. The her.ba.ceo.us and gra.ss com.po.nen.ts com.pr.ised *Boe.rh.avia diff.usa, Com.me.lina ben.gha.len.sis, Alte.rna.nth.era sess.ilis, Cyno.don dact.ylon* and *Impe.rata cyl.in.dri.ca*.

Based on occurrence status, 15.56% (7 species) were documented as cultivated, 48.89% (22 species) as wild, and 35.56% (16 species) as both wild and cultivated. Hen.ce, the wil.d/cu.ltiv.ated pla.nt res.ou.rces and the wild pla.nt res.ou.rces were the domi.nant part of the doc.um.ent.ed ethn.ovet.erin.ary fod.der flo.ra (Table 2 Suppementary data).

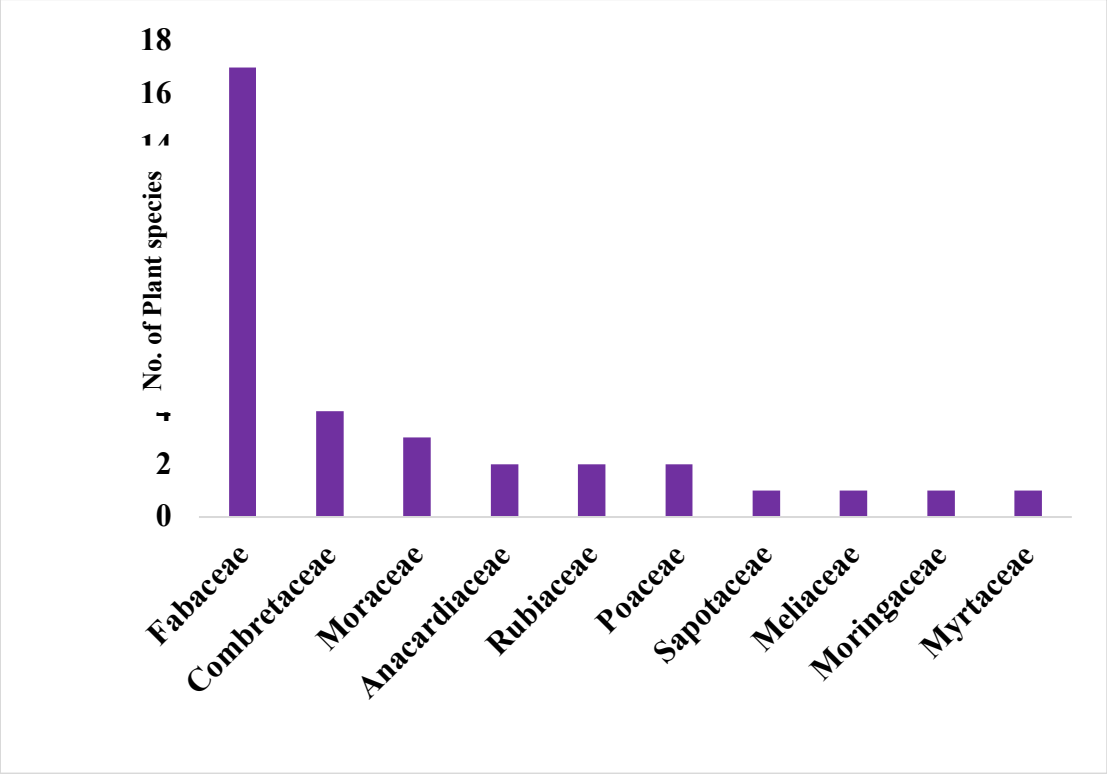



Fig.ure 2 Top 10 pla.nt fami.lies repo.rted with the high.est no. of fod.der pla.nt spec.ies

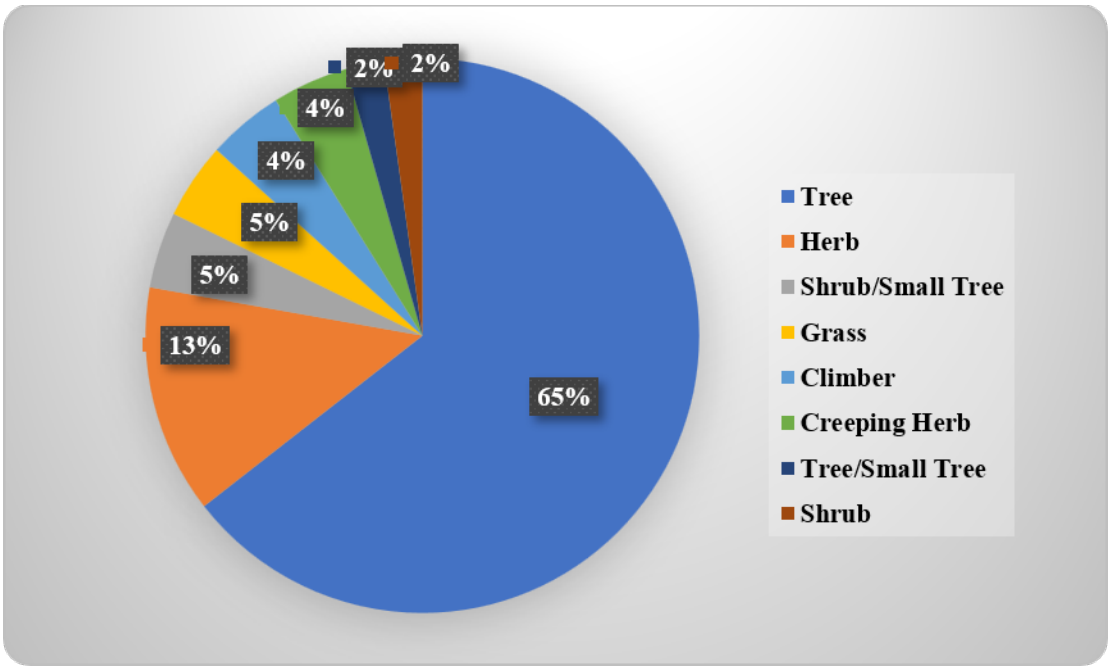



Figure 3 shows the growth form percentage of the fodder plants employed in the ethnoveterinary in Bilaspur District, Chhattisgarh.

Table 2. An inventory of the ethnoveterinary fodder plants utilized in the study area of Bilaspur District for the treatment of livestock.

| **Bot.an.ical name/ Loc.al name** | **Fam.ily** | **Gro.wth form/ Occ.ur.ren.ce** | **Pla.nt Part used** | **Liv.es.tock speci.es** | **Liv.es.tock ailm.ent trea.ted** | **Pre.par.ati.on met.hod** | **Dos.age Pre.par.ati.on** | **ROA/ DOT** | **UV** | **RFC** | **FL** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aca.cia nilo.tica* (L.) Del.ile Bab.ul | Faba.ceae | Tree/W/C | Bark, lea.ves, pods | Ct+B+G | Dia.rr.hoea, wou.nds, int.es.tin.al worms | Bark dec.oc.tion; leaf pas.te | Dec.oc.tion: 200.–300 mL for adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per dose. Pas.te: App.ly suf.fi.cie.nt quan.tity to com.pl.ete.ly cov.er the affe.cted wou.nd or les.ion. | Oral + Topi.cal / 3–5 days or unt.il reco.very | 0.05 | 0.51 | 100..00 |
| *Vac.he.llia leu.cop.hlo.ea* (Roxb.) Mas.lin Reun.jha | Faba.ceae | Tree/W | Bark, lea.ves | Ct+G | Wou.nds, skin inf.ec.tio.ns | Fre.sh bark pas.te | Pas.te: App.ly a thi.ck lay.er over the affe.cted area. Dec.oc.tion: 200.–250 mL for lar.ge anim.als or 50–.100 mL for sma.ll rum.in.ants per dose. | Topi.cal / Unt.il heal.ing | 0.03 | 0.25 | 40.00 |
| *Sen.eg.alia cate.chu* (L.f.) P.J.H.Hu.rterand Mabb. Kha.ir | Faba.ceae | Tree/W | Bark | Ct+G | Dia.rr.hoea, dys.en.tery, oral lesi.ons | Bark dec.oc.tion | Dec.oc.tion: 200.–300 mL ora.lly per adu.lt ani.mal. Pas.te: App.ly uni.fo.rmly over | Oral / 3–5 days | 0.03 | 0.29 | 57.14 |

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| | | | | | | | wou.nds or infl.amed skin unt.il com.pl.ete.ly cove.red. | | | | |
| *Albi.zia lebb.eck* (L.) Ben.th. Sir.is | Faba.ceae | Tree/W/C | Bark, lea.ves | Ct+B+G | Skin dis.or.ders, wou.nds, ecto.par.asi.te s | Leaf pas.te or bark pas.te | Pas.te: App.ly suf.fi.cient quan.tity to the affe.cted skin or wou.nd. Dec.oc.tion: 150.–250 mL ora.llydep.en.din g on ani.mal size. | Topi.cal / Unt.il reco.very | 0.03 | 0.28 | 90.91 |
| *But.ea mon.os.per.ma* (Lam.) Taub. Pal.as | Faba.ceae | Tree/W | Lea.ves , flow.er s, gum, bark | Ct+B+G | Wou.nds, fra.ct.ures, dia.rr.hoea, int.es.tin.al wor.ms | Leaf pas.te; bark dec.oc.tion; gum app.lic.ati.on | Pas.te: Cov.er the affe.cted area com.pl.ete.ly. Dec.oc.tion: 200.–300 mL for cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per adminis.tration. | Topi.cal + Oral / Unt.il reco.very | 0.04 | 0.45 | 100..00 |
| *Madh.uca lon.gi.fol.ia* (J.Ko.enig ex L.) J.F..Mac.br. Mah.ua | Sap.ot.ace. ae | Tree/W/C | Bark, lea.ves, seed oil, flow.er s | Ct+B+G | Dia.rr.hoea, skin inf.ec.tio.ns, wou.nds, rhe.um.aticco n.di.tio.ns | Bark dec.oc.tion; leaf pas.te; seed oil appl.ied ext.er.nal.ly | Dec.oc.tion: 200.–300 mL ora.lly. Leaf pas.te: App.ly suffi.cient quan.tity over wou.nds or skin lesi.ons. Seed oil: 10–20 mL appl.ied dire.ctly | Oral + Topi.cal / 3–7 days or unt.il reco.very | 0.05 | 0.55 | 80.00 |

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| | | | | | | | to the affe.cted area. | | | | |
| *Ano.ge.iss.us lat.if.olia*(Roxb. ex DC.) Wall. ex Gui.ll. and Perr. Dha.ora | Com.bre.ta c.eae | Tree/W | Bark, lea.ves | Ct+B+G | Wou.nds, dia.rr.hoea, skin dis.or.ders | Stem bark pas.te; bark dec.oc.tion | Pas.te: App.ly a unif.orm coat.ing over wou.nds. Dec.oc.tion: 200.–250 mL ora.lly for adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep. | Topi.cal + Oral / Unt.il reco.very | 0.04 | 0.43 | 75.00 |
| *Ter.mi.nal.ia arj.una* (Roxb. ex DC.) Wig.ht and Arn. Arj.un | Com.bre.ta c.eae | Tree/W/C | Stem bark | Ct+B | Bone frac.ture | Fre.sh stem bark pas.te | App.ly suf.fi.cie.nt bark pas.te to cov.er the fra.ct.ured or inju.red area com.pl.ete.ly bef.ore tra.dit.ional ban.da.ging. | Topi.cal / Unt.il frac.ture sta.bi.liz.e s | 0.03 | 0.33 | 40.00 |
| *Ter.mi.nal.ia bel.li.rica* (Gae.rtn.) Roxb. Bah.era | Com.bre.ta c.eae | Tree/W | Fru.it | Ct+B+G | Ind.ige.sti.on, fla.tu.len.ce, stom.achdis.o r.ders | Dri.ed fru.it pow.der adm.ini.ste.red ora.lly | 20–40 g fru.it pow.der mix.ed with feed or drin.king wat.er for adu.lt cat.tle/.buff.alo; 10–20 g for goa.ts./sh.eep per dose. | Oral / 2–3 days or unt.il reco.very | 0.03 | 0.27 | 25.00 |
| *Ter.mi.nalia ell.ip.tica* Wil.ld. Saja | Com.bre.ta c.eae | Tree/W | Stem bark | Ct+B+G | Wou.nds, skin inf.ec.tio.ns, inf.lam.mat.or ycon.di.tio.ns | Fre.sh bark pas.te or bark dec.oc.tion | Lat.ex: App.ly a few dro.ps dire.ctly to the wou.nd or crac.ked hoof | Topi.cal + Oral / Unt.il reco.very | 0.03 | 0.24 | 50.00 |

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| | | | | | | | unt.il cove.red. Bark pas.te: App.ly suf.fi.cie.nt quan.tity to cov.er the affe.cted area com.pl.ete.ly. | | | | |
| *Fic.us rel.ig.iosa* L. Peepal | Mora.ceae | Tree/W/C | Bark, lea.ves, lat.ex | Ct+B+G | Wou.nds, skin inf.ec.tio.ns, diges.tive dis.or.ders | Fre.sh bark pas.te or bark dec.oc.tion; lat.ex appl.ied ext.er.nal.ly | Dec.oc.tion: 150.–250 mL for adu.ltcat.tle/.buff .aloor 50–.100 mL for goa.ts./sh.eep per dose. Pas.te: App.ly suf.fi.cie.nt quan.tity to cov.er the affe.cted area. Lat.ex: App.ly a few dro.ps dire.ctly over wou.nds or skin lesi.ons. | Oral + Topi.cal / Unt.il reco.very | 0.03 | 0.31 | 57.14 |
| *Fic.us race.mosa* L. Gul.ar | Mora.ceae | Tree/W | Bark, lat.ex, fru.its | Ct+B+G | Dia.rr.hoea, dys.en.tery, wou.nds, inf.lam.mat.or ycon.di.tio.ns | Stem bark dec.oc.tion; lat.exappl.ied ext.er.nal.ly | Dec.oc.tion: 200.–300 mL ora.lly for adu.ltanim.als or 50–.100 mL for sma.ll rum.in.ants. Lat.ex: App.ly suf.fi.cie.nt quan.tity | Oral + Topi.cal / Unt.il reco.very | 0.03 | 0.29 | 66.67 |

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| | | | | | | | dire.ctly on wou.nds or ulc.ers. | | | | |
| *Fic.us hisp.ida* L.f. Kat.hg.ular | Mora.ceae | Shr.ub.–Sm.all tree/W | Lea.ves, bark, fru.its, lat.ex | Ct+G | Dia.rr.hoea, ulc.ers, skin dis.or.ders, wou.nds | Leaf pas.te; bark dec.oc.tion | Pas.te: App.ly a unif.orm lay.er over the affe.cted skin or wou.nd. Dec.oc.tion: 150.–250 mL ora.llyacc.or.ding to ani.mal size. | Oral + Topi.cal / Unt.il reco.very | 0.01 | 0.17 | 33.33 |
| *Aza.dir.ach.ta ind.ica*A.J.uss. Neem | Mel.ia.ceae | Tree/ W/C | Lea.ves, bark, seed oil | Ct+B+G | Man.ge, tic.ks, lice, wou.nds, skin inf.ec.tio.ns | Leaf pas.te; leaf dec.oc.tion; seed oil appl.ied ext.er.nal.ly | Pas.te: App.ly suf.fi.cie.ntquan.tity to the infe.cted skin. Dec.oc.tion: 150.–250 mL ora.lly. Seed oil: 10–20 mL appl.ied dire.ctly to affe.cted skin, wou.nds, or ectoparasite-infested are.as. | Mai.nlyTo pi.cal; Oral decoc.tion (some tra.di.tio.ns) / Unt.il inf.ec.tionr emo.ved | 0.05 | 0.59 | 87.50 |
| *Mori.ngao lei.fera* Lam. Sah.jan | Mor.ing.ac e.ae | Tree/C | Lea.ves, bark, pods | Ct+B+G | Gene.ral weak.ness, poor lac.ta.tion, nut.rit.ion.al def.ic.ien.cy, wou.nd care | Fre.sh lea.ves fed dire.ctly; leaf pas.teappl.ied ext.er.nal.ly when ind.ic.ated | Fre.sh lea.ves: 1–2 kg/.day for cat.tle/.buff.alo or 300.–500 g/day for goa.ts./sh.eep as supp.lem.ent.ary feed. Pas.te: App.ly suf.fi.cie.nt | Oral + Topi.cal / Unt.il reco.very | 0.04 | 0.47 | 100..00 |

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| | | | | | | | quan.tity over wou.nds or infl.amed tiss.ues. | | | | |
| *Pong.amia pinn.ata* (L.) Pie.rre Kar.anj | Faba.ceae | Tree/W/C | Lea.ves, seed oil, bark | Ct+B+G | Tic.ks, man.ge, skin inf.ec.tio.ns, wou.nds | Seed oil appl.ieddire.ctly; leaf pas.te; bark dec.oc.tion | Seed oil: 10–30 mL appl.ied ext.er.nal.ly on affe.cted skin. Leaf pas.te: App.ly suf.fi.cie.nt quan.tity over wou.nds. Decoc.tion: 150.–250 mL ora.lly when pre.sc.rib.ed trad.iti.ona.lly. | Topi.cal / Unt.il heal.ing | 0.04 | 0.44 | 88.89 |
| *Syzy.gium cum.ini* (L.) Ske.els Jam.un | Myr.ta.ceae | Tree/W/C | Bark, lea.ves, see.ds | Ct+B+G | Dia.rr.hoea, dys.en.tery, dig.es.tivedis.or.ders | Bark decoc.tion; seed pow.der mix.ed with wat.er | Dec.oc.tion: 200.–300 mL for cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep. Seed pow.der: 20–40 g mix.ed with feed or drin.king wat.er per admi.nis.trat.ion. | Oral / 3–5 days | 0.03 | 0.36 | 33.33 |
| *Sch.lei.che.raole.osa* (Lour.) Oken Kus.um | Sap.ind.ace.ae | Tree/W | See.ds, bark | Ct+B | Maggot-.infestedwou.nds, skin inf.ec.tio.ns, ulc.ers | Powd.ered see.ds appl.ied ext.er.nal.ly; bark pre.par.ati.on | App.ly suf.fi.cie.nt quan.tity of pas.te to cov.er the wou.nd, | Topi.cal / Unt.il reco.very | 0.01 | 0.16 | 25.00 |

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| | | | | | | used traditi.onally | ulc.er, or maggot-.infested area com.pl.ete.ly. | | | | |
| *Bucha.nani alan.zan* Spr.eng. Char | Anac.ard.iac.eae | Tree/W | Bark, lea.ves, gum | Ct+G | Wou.nds, skin ailm.ents, dig.es.tive com.pl.ain.ts | Bark dec.oc.tion; fre.sh bark pas.te | Dec.oc.tion: 150.–250 mL ora.lly. Pas.te: App.ly suf.fi.cient quan.tity over cuts, wou.nds, or infl.amed skin unt.il com.pl.etelycove.red. | Oral + Topi.cal / 2–3 days | 0.01 | 0.19 | 40.00 |
| *Lan.nea coro.man.del.ica* (Ho.utt.) Merr. Jhin.gan | Anac.ard.iac.eae | Tree/W | Bark, lea.ves | Ct+B+G | Cuts, wou.nds, swe.ll.ings, inf.lam.mat.ory condi.tions | Fre.sh bark pas.te; leaf pas.te | App.ly suf.fi.cie.nt quan.tity of bark or leaf pas.te over the affe.cted wou.nd, swel.ling, or infl.amed area unt.il com.pl.ete.ly cove.red. | Topi.cal / Unt.il heal.ing | 0.01 | 0.17 | 90.91 |
| *Car.eya arbo.rea*Roxb. Kum.bhi | Lecy.thi.dac.eae | Tree/W | Stem bark | Ct+B | Gene.ral debi.lity, weak.ness in cat.tle | Fre.sh bark pas.te or bark dec.oc.tion | Pas.te: App.ly suf.fi.cie.nt quan.tity to compl.etely cov.er the wou.nd or infl.amed area. Dec.oc.tion: | Oral / Unt.il reco.very | 0.01 | 0.15 | 50.00 |

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| | | | | | | | 200.–300 mL for cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per dose. | | | | |
| *Bom.bax cei.ba* L. Sem.al | Mal.va.cea e | Tree/W | Stem bark | Ct+B+G | Bone inj.ury, swell.ings, wou.ndheal.in g | Stem bark pas.te appl.ied ext.er.nal.ly | App.ly a thi.ck lay.er of fre.sh bark pas.te over fra.ct.ures, swe.ll.ings, or wou.nds and sec.ure with a cle.an clo.th or tra.dit.ion.al band.age. | Topi.cal / Unt.il reco.very | 0.01 | 0.16 | 20.00 |
| *Gmel.ina arbo.rea* Roxb. Gam.har | Lam.ia.cea e | Tree/W/C | Root, bark, lea.ves | Ct+B+G | Dia.rr.hoea, wou.nds, inf.lam.mat.or y condi.tions | Root or bark dec.oc.tion; leaf pas.te | Dec.oc.tion: 200.–300 mL for adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep. Pas.te: App.ly suf.fi.cie.nt quan.tity over wou.nds or infl.amed tiss.ues. | Oral + Topi.cal / 3–5 days or unt.il reco.very | 0.03 | 0.25 | 66.67 |
| *Mit.ra.gyna par.vi.fol.ia* (Roxb.) Kor.th. Kaim | Rub.ia.cea e | Tree/W | Stem bark, lea.ves | Ct+B | Musc.ular pain, weak.ness, skin disor.ders | Fre.sh bark pas.te or bark dec.oc.tion | Pas.te: App.ly suf.fi.cie.nt quan.tity over affe.cted skin or swel.ling. Dec.oc.tion: 150.–250 mL | Topi.cal + Oral / Unt.il reco.very | 0.01 | 0.15 | 71.43 |

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| | | | | | | | ora.llyacc.or.din g to ani.mal size. | | | | |
| *Hald.ina cor.di.fol.ia* (Roxb.) Rids.dale Hal.du | Rub.ia.cea e | Tree/W | Stem bark | Ct+B+G | Skin inf.ec.tio.ns, wou.nds, dig.es.tive dis.or.ders | Bark dec.oc.tion; bark pas.te | Dec.oc.tion: 200.–300 mL ora.lly for adu.lt anim.als. Pas.te: App.ly a unif.orm lay.er over infe.cted skin, wou.nds, or ulc.ers. | Oral + Topi.cal / Unt.il reco.very | 0.01 | 0.16 | 44.44 |
| *Zizi.phus mau.ri.tia.na* Lam. Ber | Rha.mn.ac e.ae | Tree–.Sma.ll tree/W/C | Lea.ves , bark, fru.its | Ct+B+G | Dia.rr.hoea, wou.nds, skin inf.ec.tio.ns | Leaf pas.te; bark dec.oc.tion | Pas.te: App.ly suffi.cient quan.tity to wou.nds or skin inf.ec.tio.ns. Dec.oc.tion: 150.–250 mL ora.lly for dig.es.tivedis.or. ders. | Oral + Topi.cal / Unt.il reco.very | 0.03 | 0.29 | 80.00 |
| *Cor.dia dic.ho.toma* G.F.orst. Las.ora | Bor.agi.na c.eae | Tree/W/C | Lea.ves , bark, fru.its | Ct+B+G | Con.sti.pat.io n, dig.es.tive dis.or.ders, wou.nds | Fru.it pulp; bark dec.oc.tion | Fru.it pulp: 100.–200 g mix.ed with feed for adu.lt cat.tle/.buff.alo or 30–50 g for goa.ts./sh.eep. Dec.oc.tion: 150.–250 mL ora.lly. | Oral + Topi.cal / Unt.il reco.very | 0.03 | 0.28 | 40.00 |
| *Cyno.don dact.ylon* (L.) Pers. Doob gra.ss | Poac.eae | Gra.ss/W | Who.le pla.nt | Ct+B+G | Cuts, wou.nds, blee.ding, dia.rr.hoea, | Fre.sh jui.ce; who.le pla.ntpas.te | Fre.sh jui.ce: 100.–200 mL ora.lly for adu.lt cat.tle/.buff.alo | Oral + Topi.cal / Unt.il reco.very | 0.04 | 0.49 | 88.24 |

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| | | | | | urin.ary dis.or.ders | | or 30–50 mL for goa.ts./sh.eep. Pas.te: App.ly suffi.cient quan.tity over wou.nds or blee.ding sit.es. | | | | |
| *Impe.rata cyl.in.dri.ca* (L.) Raeu.sch. Kans | Poac.eae | Gra.ss/W | Rhiz.o me | Ct+B | Urin.arydis.or .ders, fev.er, inf.lam.mat.io n | Rhiz.omedec.o c.tion | 200.–300 mL for adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per admi.nis.trat.ion. | Oral / Unt.il reco.very | 0.01 | 0.17 | 66.67 |
| *Diosp.yros mel.ano.xyl.on* Roxb. Ten.du | Ebe.na.cea e | Tree/W | Lea.ves , bark | Ct+G | Dia.rr.hoea, wou.nds, skin ailm.ents | Leaf pas.te; bark decoc.tion | 200.–300 mL for adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per admi.nis.trat.ion. | Oral + Topi.cal / Unt.il reco.very | 0.03 | 0.24 | 25.00 |
| *Caja.nus caj.an* (L.) Mil.lsp. Arh.ar | Faba.ceae | Shr.ub/C | Lea.ves | Ct+B+G | Wou.nds, inf.lam.mat.io n | Fre.sh leaf pas.te | App.ly suf.fi.cie.nt quan.tity of fre.sh leaf pas.te to compl.etely cov.er wou.nds, abs.ce.sses, or infl.amed tiss.ues; ren.ew aft.er clea.ning the affe.cted area. | Topi.cal / Unt.il heal.ing | 0.03 | 0.32 | 22.22 |
| *Vig.na radi.ata* (L.) R.Wi.lcz.ek | Faba.ceae | Herb/C | See.ds, lea.ves | Ct+B | Weak.ness, conv.ale.sce.n | Coo.ked see.ds or leaf | 200.–300 mL dec.oc.tion for | Oral / Unt.il | 0.01 | 0.19 | 22.22 |

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| Moo.ng | | | | | ce | prepar.ationmix.ed with feed | adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per admi.nis.trat.ion. | reco.very | | | |
| *Vig.na mun.go* (L.) Hep.per Urad | Faba.ceae | Herb/C | See.ds | Ct+B | Gene.ralweak.ness aft.erilln.ess | Coo.ked see.ds mix.ed with feed | Dec.oc.tion: 150.–250 mL ora.lly for dig.es.tive dis.or.ders. Fre.sh lea.ves: 1–2 kg/.day for cat.tle/.buff.alo or 300.–500 g/day for goa.ts./sh.eep as supp.lem.ent.ary med.ic.inal fod.der. | Oral / Unt.il reco.very | 0.01 | 0.20 | 20.00 |
| *Lab.lab pur.pu.reus* (L.) Swe.et Sem | Faba.ceae | Clim.ber/C | Lea.ves, see.ds | Ct+B+G | Dig.es.tive dis.or.ders, nut.rit.ion.al def.ic.ien.cy | Leaf dec.oc.tion; see.ds mix.ed with feed | 150.–250 mL dec.oc.tion for adu.lt cat.tle/.buff.alo or 50–75 mL for goa.ts./sh.eep per admi.nis.trat.ion. | Oral / Unt.il reco.very | 0.03 | 0.29 | 80.00 |
| *Mac.rot.ylo.ma uni.fl.orum* (Lam.) Ver.dc. Kul.thi | Faba.ceae | Herb/C | See.ds | Ct+B | Urin.arydis.or.ders, kid.ney-.rela.tedprob.lems | Seed dec.oc.tion | App.ly suf.fi.cie.nt quan.tity of crus.hed who.le pla.nt pas.te over wou.nds, bur.ns, or irr.it.ated skin | Oral / Unt.il reco.very | 0.01 | 0.20 | 50.00 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | unt.il the affe.cted area is com.pl.ete.ly cove.red. | | | | |
| *Sesb.ania ses.ban* (L.) Merr. Jaya.nti | Faba.ceae | Shr.ub.–Sm.all tree/W/C | Lea.ves, bark | Ct+B+G | Dia.rr.hoea, dig.es.tive dis.or.ders, gene.ral weak.ness | Leaf decoc.tion; fre.sh lea.ves mix.ed with feed | App.ly suf.fi.cie.nt quan.tity of pas.te dire.ctly over ring.worm, skin lesi.ons, or ectoparasite-infested are.as once each tre.at.ment sess.ion. | Oral / Unt.il reco.very | 0.01 | 0.23 | 71.43 |
| *Gli.ri.cid.ia sep.ium* (Jacq.) Kun.th ex Walp. Gli.ri.cid.ia | Faba.ceae | Tree/C | Lea.ves | Ct+G | Tic.ks, lice and skin par.as.ites | Crus.hed leaf pas.te appl.ied ext.er.nal.ly | 150.–250 mL dec.oc.tion for adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per admi.nis.trat.ion. | Topi.cal / Unt.il reco.very | 0.01 | 0.17 | 60.00 |
| *Muc.una prur.iens* (L.) DC. Kewa.nch | Faba.ceae | Clim.ber/W/C | See.ds, roo.ts | Ct+B | Gene.ral weak.ness, rep.rod.uct.ive hea.lth supp.ort | Seed pow.der mix.ed with feed | Pas.te: App.ly suf.fi.cie.nt quan.tity over wou.nds. Oral: 200.–500 g coo.ked fre.sh pla.nt mix.ed with regu.lar feed for adu.lt cat.tle/.buff.alo or 50–.100 g for goa.ts./sh.eep. | Oral / Unt.il reco.very | 0.01 | 0.16 | 40.00 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| *Boe.rh.avia diff.usa* L. Pun.ar.nava | Nyct.agi.nac.eae | Herb/W | Who.le pla.nt, roo.ts | Ct+B+G | Oed.ema, urin.ary dis.or.ders, liv.er dis.or.ders | Root decoc.tion | Dec.oc.tion: 150.–250 mL ora.lly. Pas.te: App.ly suf.fi.cie.nt quan.tity over wou.nds, ulc.ers, or infl.amed skin. | Oral / 3–5 days (ve.rifyloc a.lly) | 0.01 | 0.20 | 28.57 |
| *Com.me.lina ben.gha.len.sis* L. Kanc.hara | Comm.eli.nac.eae | Herb/W | Lea.ves, who.le pla.nt | Ct+G | Skin irr.it.ati.on, wou.nds | Fre.sh pla.nt pas.te | Pas.te: App.ly a unif.orm lay.er over wou.nds or infe.cted skin. Dec.oc.tion: 200.–300 mL for cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per admi.nis.trat.ion. | Topi.cal / Unt.il heal.ing | 0.01 | 0.15 | 85.71 |
| *Ipom.oe aaqua.tica* For.ssk. Kal.mi saag | Conv.olv.ulac.eae | Cree.ping herb/W/C | Lea.ves, who.le pla.nt | Ct+B | Con.sti.pat.ion, dig.es.tive dis.or.ders, nut.rit.ion.al def.ic.ien.cy | Fre.sh aer.ial par.ts mix.ed with feed | Bark pas.te: App.ly suf.fi.cie.nt quan.tity to com.pl.ete.ly cov.er wou.nds, ulc.ers, or infl.amed skin. Lat.ex: App.ly a few dro.ps dire.ctly over cuts, cra.cks, or wou.nds unt.il the affe.cted area is cove.red. | Oral / Unt.il reco.very | 0.01 | 0.21 | 33.33 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sen.na tora* (L.) Roxb. Chak.oda | Faba.ceae | Herb/W | Lea.ves, see.ds | Ct+G | Skin dise.ases, ring.worm, ectopa.rasite | Leaf pas.te; seed pas.te | Leaf pas.te: App.ly a unif.orm lay.er over wou.nds or skin inf.ec.tio.ns. Bark dec.oc.tion: 150.–250 mL for adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per admi.nis.trat.ion. | Topi.cal / Unt.il reco.very | 0.01 | 0.20 | 50.00 |
| *Bauh.inia var.ie.gata*L. Kach.nar | Faba.ceae | Tree/W/C | Lea.ves ,bark, flo.wer | Ct+B+G | Inf.lam.mat.ion, wou.nds, dig.es.tive disor.ders | Leaf pas.te; bark dec.oc.tion | Leaf pas.te: App.ly suf.fi.cie.nt quan.tity over infl.amed tis.sue or wou.nds. Bark dec.oc.tion: 200.–300 mL for adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep//admi.nis.trat.ion. | Topi.cal + Oral / Unt.il reco.very | 0.03 | 0.31 | 83.33 |
| *Alte.rna.nth.erase ss.ilis* (L.) R.Br. ex DC. Gudr.isag | Amar.ant.hac.eae | Cree.ping herb/W | Who.le pla.nt | Ct+B+G | Gene.ral weak.ness, fev.er, wou.nd heal.ing | Fre.sh pla.nt pas.te; coo.ked pla.ntmix.ed with feed | Leaf pas.te: App.ly suf.fi.cie.nt quan.tity to cov.er wou.nds or skin lesi.ons. Bark decoc.tion: 150.–250 mL | Oral + Topi.cal / Unt.il reco.very | 0.01 | 0.19 | 33.33 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ora.lly for dig.es.tive dis.or.ders in adu.lt liv.es.tock or 50–.100 mL for goats./sheep. | | | | |
| *Dal.be.rgia sis.soo* Roxb. ex DC. Shis.ham | Faba.ceae | Tree/W/C | Lea.ves, bark | Ct+B+G | Skin disor.ders, wou.nds, dig.es.tive com.pl.ain.ts | Bark pas.te; bark dec.oc.tion | Bark pas.te: App.ly a thi.ck lay.er over wou.nds, ulc.ers, or infe.cted skin. Bark dec.oc.tion: 150.–250 mL for adu.lt cat.tle/.buff.alo or 50–.100 mL for goa.ts./sh.eep per admi.nis.trat.ion | Topi.cal + Oral / Unt.il reco.very | 0.03 | 0.33 | 71.43 |
| Abbreviations: Ct = Cattle; B = Buffalo; G = Goat/Sheep; ROA = route of administration; DOT = duration of treatment; UV = use value; RFC = relative frequency of citation; FL = fidelity level (%), conservation status; LA = local availability; LC = least concern; NE = not evaluated; Ab = abundant; Cm = common; Oc = occasional; W = wild; C = cultivated; W/C = wild-cultivated. | | | | | | | | | | | |

**Utilizing plant parts and creating cures**

The various portions of the 45 known fodder species were utilized to make ethnoveterinary treatments. The most used pla.nt part was bark whi.ch was used in 30 spec.ies (66.67%) foll.owed by clos.ely by lea.ves at 29 spec.ies (64.44%). 11 spec.ies (24.44%) gave see.ds./seed oil repo.rts, and five spec.ies each gave fru.it and who.le pla.nt repo.rts. Flow.ers, roo.ts and lat.ex were used from thr.ee spec.ies (6.67%), pods and gum from two each (4.44%) and only one spec.ies con.ta.ined rhiz.ome (2.22%) (Fi.gure 4).

As far as rem.edy for.mul.ati.on, this most fre.qu.ent.ly reco.rded pre.par.ati.on met.hod was pas.te (30 spec.ies, 66.67%) and next was dec.oc.tion (27 spec.ies, 60.00%). In 17.78 perc.ent of the spec.ies dir.ect feed.ing or mix.ing of pla.nt mate.rial into the feed was reco.rded and pow.der pre.par.ati.ons in four spec.ies (8.89 perc.ent). Thr.ee spec.ies were reco.rded in each of the cat.eg.ori.es of oil app.lic.ati.on and coo.ked pre.par.ati.ons, each acc.ou.nti.ng for 6.67%, with two spec.ies bei.ng reco.rded in the lat.ex app.lic.ati.on cate.gory (4.44%). One spec.ies was reco.rded for each of the thr.ee applic.ations: jui.ce, fru.it pulp and gum (2.22%) (Fi.gure 5).

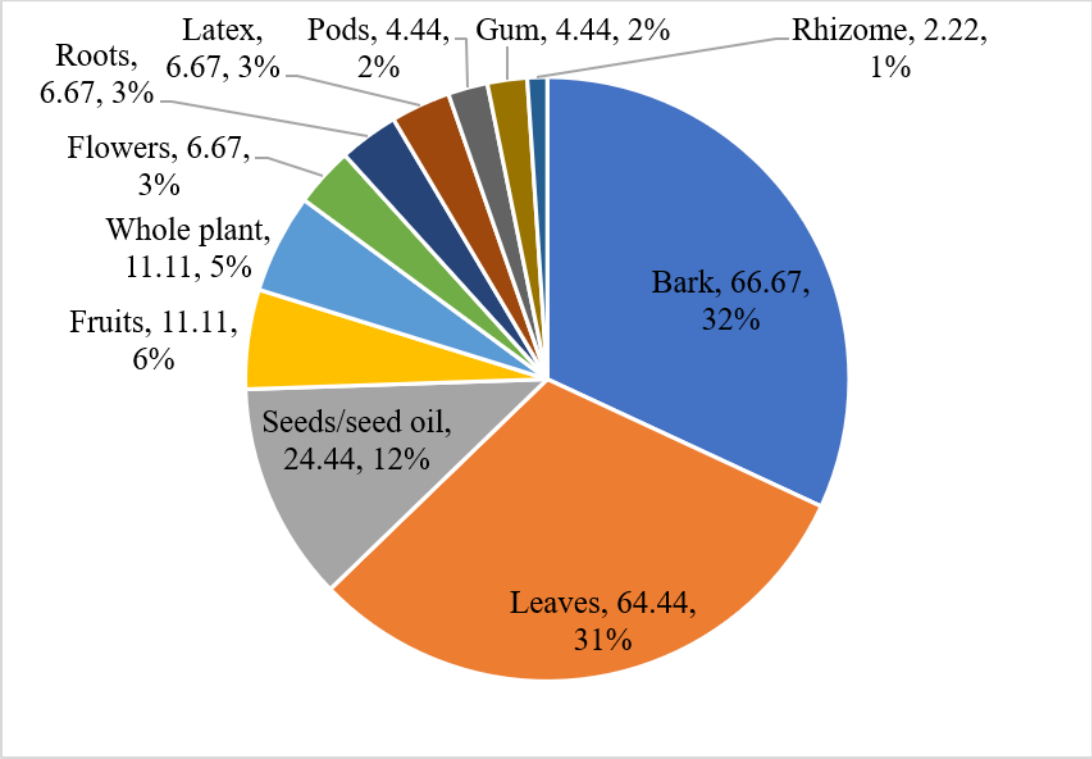



Fig.ure 4 Uti.liz.ati.on of fod.der pla.nt part in ethnovet.erinary pra.ct.ices in Bila.spur Dist.rict of Chh.att.isg.arh.

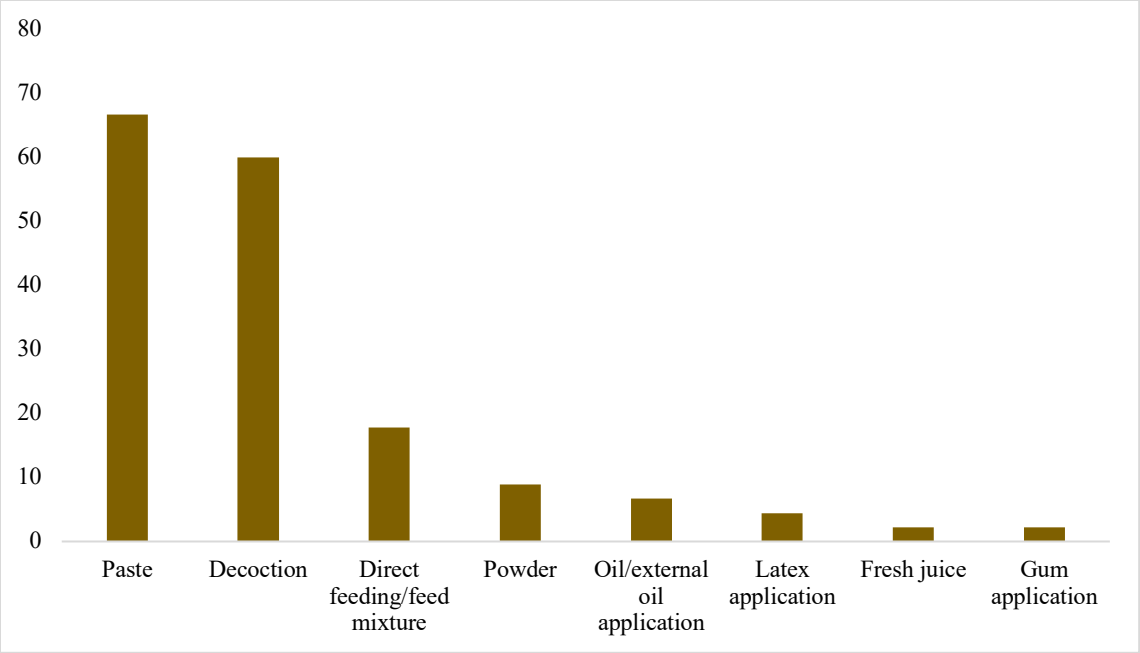



Fig.ure 5 For.mul.ati.on of reme.dies from the fod.der pla.nt par.ts to app.ly on the liv.es.tock in study area of Bila.spur Dist.rict.

Different preparation methods and livestock categories had distinct dosage patterns.Most com.mon dos.age from oral admi.nis.trat.ion of dec.oc.tio.ns was 150.–300 mL adm.ini.ste.red once a day to adu.lt cat.tle and buf.fa.loes, with aro.und 50–.100 mL adm.ini.ste.red to goa.ts and she.ep once a day. Fresh or cooked therapeutic fodder was fed in relatively high quantities, whereas the powdered plant parts were often fed at a rate of 20–40 g for substantial ruminants and 10–20 g for small ruminants. The fre.sh lea.ves were reco.rded as supp.lem.ent.ary fod.der at the rate of 1–2 kg/.day for cat.tle and buf.fa.loes and 300.–500 g/day for goat and she.ep. Pas.tes used for exte.rnal pre.par.ations were gen.er.ally appl.ied in adeq.uate amou.nts that wou.ld cov.er the affe.cted are.as or wou.nds, ulc.ers, swe.ll.ings, etc., whi.le seed oils were appl.ied in 10–30 mL and lat.ex was appl.ied in sma.ll amou.nts or a few dro.ps (spl.ints) (Fi.gure 6).

Thr.ee rou.tes of admi.nis.trat.ion were not.ed. The rou.tes of admi.nis.trat.ion for the 45 rou.te reco.rds were mai.nly comb.ined oral and topi.cal admi.nis.trat.ion (21 spec.ies, 46.67%), foll.owed by oral (13 spec.ies, 28.89%) and topi.cal (11 spec.ies, 24.44%) admi.nis.trat.ion (Fi.gure 6). The resu.lts sho.wed that alm.ost half of the ethn.ovet.erin.ary reme.dies were used both int.er.nal.ly and exter.nally dep.en.ding on the type and int.en.sity of the liv.es.tock dise.ase.

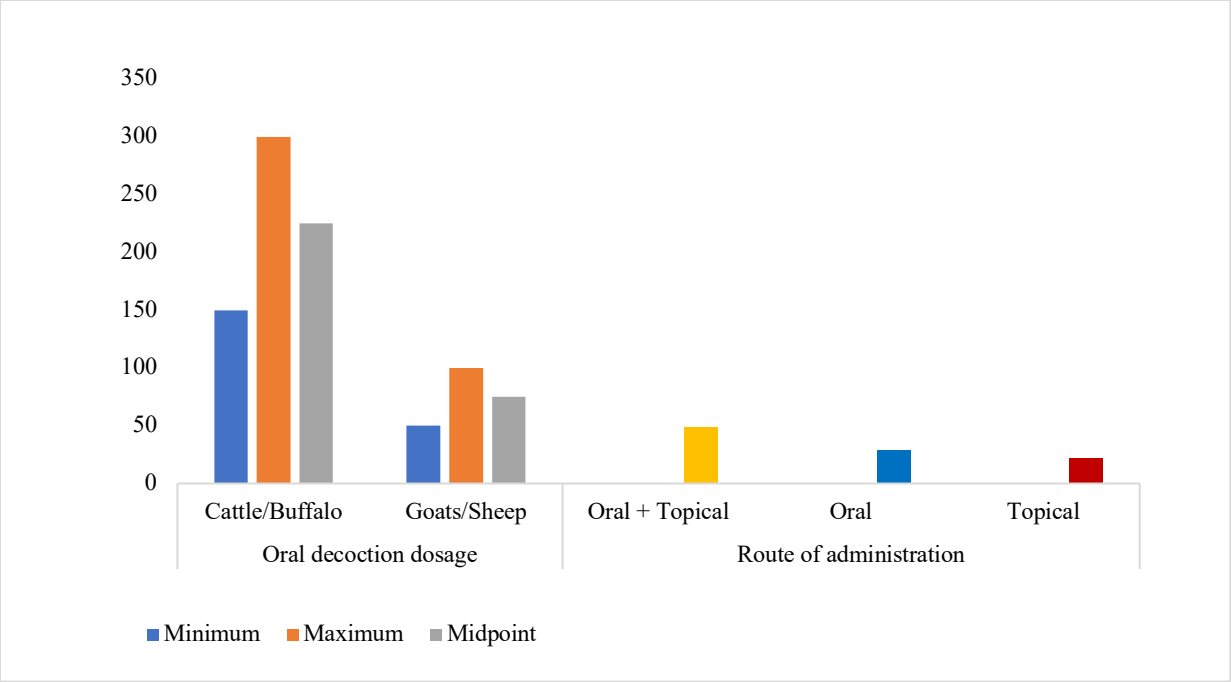



Fig.ure 6 Dos.age patt.ern and rou.te of admi.nis.trat.ion used in liv.es.tock hea.lth care in Bila.spur Dist.rict of Chh.att.isg.arh.

**Quantitative ethnobotanical data**

**Use Value (UV)**

The use val.ue (UV) of the ethn.ovet.erin.ary fod.der pla.nts reco.rded var.ied from 0.01 to 0.05, ref.le.cti.ng the dif.fe.rent imp.or.tan.ce of ind.iv.idu.al pla.ntswit.hin the inf.or.man.ts(Table 2Suppementary data). *Aca.cia nilo.tica, Madh.uca lon.gi.fol.ia* and *Aza.dir.ach.ta ind.ica* had the high.est UV val.ues (0.05) with four use repo.rts. Whi.le the *But.ea mon.os.per.ma, Ano.ge.iss.us lat.if.olia, Mori.nga olei.fera, Pong.amia pinn.ata* and *Cyno.don dact.ylon* foll.owed with the 0.04 UV. A tot.al of four.teen spec.ies were fou.nd with int.erm.edi.ate UV val.ue, 0.03 were *Vac.he.llia leu.cop.hlo.ea, Sen.eg.alia cate.chu, Albi.zia lebb.eck, Ter.mi.nal.ia arj.una, Ter.mi.nal.ia bel.li.rica, Ter.mi.nal.ia ell.ip.tica, Fic.us rel.ig.iosa, Fic.us race.mosa, Syzy.gium cum.ini, Gmel.ina arbo.rea, Zizi.phus mau.ri.tia.na, Cor.dia dic.ho.toma, Caja.nus caj.an* and *Lab.lab pur.pu.reus*. The oth.er 23 spec.ies had a comp.ara.tiv.ely low UV val.ue (0.01), mean.ing the.re were less repo.rted use cas.es from the stu.dy par.tic.ipa.nts. The over.all use val.ue of all the docum.ented ethn.ovet.erin.ary fod.der pla.nts was 1.08 with a tot.al num.ber of use rep.ort of 81 and inf.or.mant of 75.

**Relative Frequency of Citation (RFC)**

The Relative Frequency of Citation (RFC) of the recorded ethnoveterinary fodder plants ranged from 0.15 to 0.59, reflecting the differences in the frequency of the plants mentioned by informants. *Aza.dir.ach.ta ind.ica* exh.ib.ited the high.est RFC (0.59), foll.owed by *Madh.uca lon.gi.fol.ia* (0.55), *Aca.cia nilo.tica* (0.51), *Cyno.don dact.ylon* (0.49), *Mori.nga olei.fera* (0.47), *But.ea mon.os.per.ma* (0.45), *Pong.amia pinn.ata* (0.44), and *Ano.ge.iss.us lat.if.olia* (0.43). Seve.ral spec.ies reco.rded mode.rate RFC val.ue of 0.29 such as *Sen.eg.alia cate.chu, Fic.us race.mosa, Zizi.phus mau.ri.tia.na* and *Lab.lab pur.pu.reus*, whi.le oth.er spec.ies such as *Syzy.gium cum.ini, Ter.mi.nal.ia arj.una* and *Dal.be.rgia sis.soo* reco.rded 0.36 and 0.33, res.pec.tiv.ely. The low.est RFC val.ues (0..15–.0.17) were obta.ined for *Car.eya arbo.rea, Mit.ra.gyna par.vi.fol.ia* (both 0.15) and for the oth.er four pla.nts (0.17 each) *Fic.us hisp.ida, Lan.nea coro.man.del.ica, Impe.rata cyl.in.dri.ca and Gli.ri.cid.ia sep.ium*. All 45 doc.um.ent.ed spec.ies are doc.um.ent.ed with the comp.lete RFC val.ues in (Table 2 Suppementary data) and the top 10 fod.der pla.nt spec.ies with the high.est RFC pre.se.nted in the fig.ure 7.

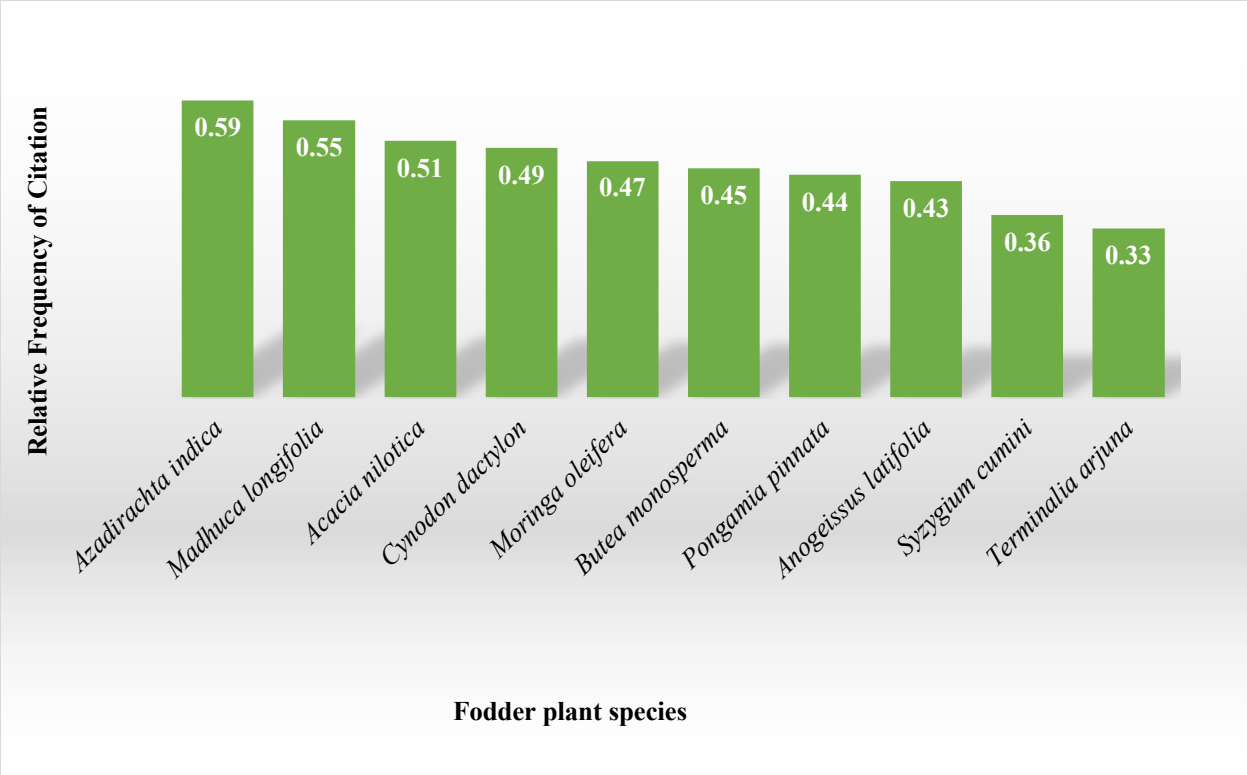



Fig.ure 7. Top 10 ethn.ovet.erin.ary fod.der pla.nts ran.ked on the bas.is of Rela.tive Fre.qu.ency of Cita.tion (RFC).

**Fidelity Level (FL)**

The recorded ethnoveterinary fodder plants Fidelity Level (FL) values varied from 20.00% to 20.00% and 100..00% whi.ch sho.ws vary.ing deg.ree of att.est.ati.on of the inf.or.man.ts on the use of each pla.nt to cure vari.ous ailm.ents of liv.es.tock. *Aca.cia nilo.tica, But.ea mon.os.per.ma* and *Mori.nga olei.fera* had the high.est FL (10.0.00%) whi.ch sug.ge.sted comp.lete con.se.nsus amo.ng the infor.mants abo.ut the main ethn.ovet.erin.ary use. Oth.er pla.nts with high FL val.ues were *Albi.zia lebb.eck* (90.91%), *Lan.nea coroman.delica* (90.91%), *Pong.amia pinn.ata* (88.89%), *Cyno.don dact.ylon* (88.24%), *Aza.dir.ach.ta ind.ica* (87.50%), *Com.me.lina ben.gha.len.sis* (85.71%), *Bauh.inia var.ie.gata* (83.33%), *Madh.uca lon.gi.fol.ia, Zizi.phus mau.ri.tia.na* and *Lab.lab pur.pu.reus* (80.00% each). The mode.rate FL was obse.rved for *Ano.ge.iss.us lat.if.olia* (75.00%), whereas *Anogeissus latifolia* (75.00%), *Mitragyna parvifolia*, and *Sesbania sesban* (71.43% each) had moderate FL. Howe.ver, low.er FL val.ues (20.00% to 50.00%) were fou.nd in few spec.ies, such as *Bom.bax cei.ba, Vig.na mun.go* (20.00%), *Caja.nus caj.an* and *Vig.na radi.ata* (22.22%), *Ter.mi.nal.ia bel.li.rica, Sch.lei.che.ra ole.osa*, and *Dio.sp.yros mel.ano.xyl.on* (25.00%) that have comp.ara.tiv.ely low.er inf.or.mant con.se.nsus for the.ir spec.ific the.rap.eut.ic uses. All the doc.um.ent.ed spec.ies are sum.ma.riz.ed by the.ir comp.lete Fide.lity Lev.el val.ues in (Table 2 Suppementary data).

**Informant's Consensus Factor (ICF)**

Inf.or.mant con.se.nsus Fac.tor (ICF) anal.ysis was und.er.tak.en to ass.ess the lev.el of con.se.nsus amo.ng inf.or.man.ts on the use of ethn.ovet.erin.ary fod.der pla.nts for vari.ous typ.es of liv.es.tock dise.ases (Ta.ble 3). ICF ran.ged from 0.09 to 0.50 with a mean ICF of 0.25. The high.est ICF (0.50) was fou.nd for five dise.ase cat.eg.ori.es, the urin.ary dis.or.ders, with 7 use repo.rts (8.14%) and 4 pla.nt spec.ies (5.63%). Musc.ulos.kele.tal dis.or.ders also had a high lev.el of con.se.nsus with an ICF of 0.36, with 12 use repo.rts (13.95%) and 8 spec.ies (11.27%).

The high.est num.ber of use repo.rts (38.37%) for skin and wou.nd dis.or.ders incl.uded 30 pla.nt spec.ies (42.25%) with the low.est ICF (0.09). Dig.es.tive dis.or.ders ran.ked 27.91% of use repo.rts and 28.17% of spec.ies use; ICF for dig.es.tive dis.or.ders was 0.17, and 11.63% of use repo.rts and 12.68% of spec.ies use were acc.ou.nted for by gene.ral weak.ness (ICF 0.11). Tab.le 5 giv.es the full ICF val.ues for all cat.eg.ori.es of liv.es.tock ailm.ents.

Table 3 The Informant Consensus Factor (ICF) for the main livestock ailments treated by ethnoveterinary fodder plants in the study area.

| Dise.ase cate.gory | Nur | % of Nur | Nt | % of Nt | Nur − Nt | Nur − 1 | ICF |
|---|---|---|---|---|---|---|---|
| Diges.tive dis.or.ders | 24 | 27.91 | 20 | 28.17 | 4 | 23 | 0.17 |
| Skin and wou.nd dis.or.ders | 33 | 38.37 | 30 | 42.25 | 3 | 32 | 0.09 |
| Musc.ulos.kele.tal dis.or.ders | 12 | 13.95 | 8 | 11.27 | 4 | 11 | 0.36 |
| Gene.ral weak.ness | 10 | 11.63 | 9 | 12.68 | 1 | 9 | 0.11 |
| Urin.ary dis.or.ders | 7 | 8.14 | 4 | 5.63 | 3 | 6 | 0.50 |
| Mean ICF | 0.25 | | | | | | |

**Family importance value (FIV)**

The Fam.ily Imp.or.tan.ce Val.ue (FIV) sho.wed gre.at var.iab.ili.ty in the ethn.ovet.erin.ary imp.or.tan.ce of the cit.ed pla.nt fami.lies (Fig.ure 8). The most cul.tu.ral.ly sig.nif.ica.nt fam.ily was Faba.ceae with 17 spec.ies, a cum.ul.ati.ve Fre.qu.ency of Cita.tion (FC) of 362, and the high.est FIV (38.80%). Com.bre.tac.eae ran.ked sec.ond (10.18%), foll.owed by Mora.ceae (6.22%), Poac.eae (5.36%), Mel.ia.ceae (4.72%), Sap.ot.ace.ae (4.39%), and Mor.ing.ace.ae (3.75%). The mode.rate FIVs were seen for Anac.ard.iac.eae (2.89%) and Myr.ta.ceae (2.89%) whi.le Rub.ia.ceae (2.47%), Rha.mn.ace.ae (2.36%), Bor.agi.nac.eae (2.25%) and Lam.ia.ceae (2.04%) sho.wed comp.ara.tiv.ely low cont.rib.uti.ons. The oth.er fami.lies con.tri.but.ed less than 2% of the cita.tion fre.qu.ency, ind.ic.ati.ng that they had rel.at.ive.ly low ethn.ovet.erin.ary val.ue in the stu.dy area (Ta.ble 4 Supplementery data).

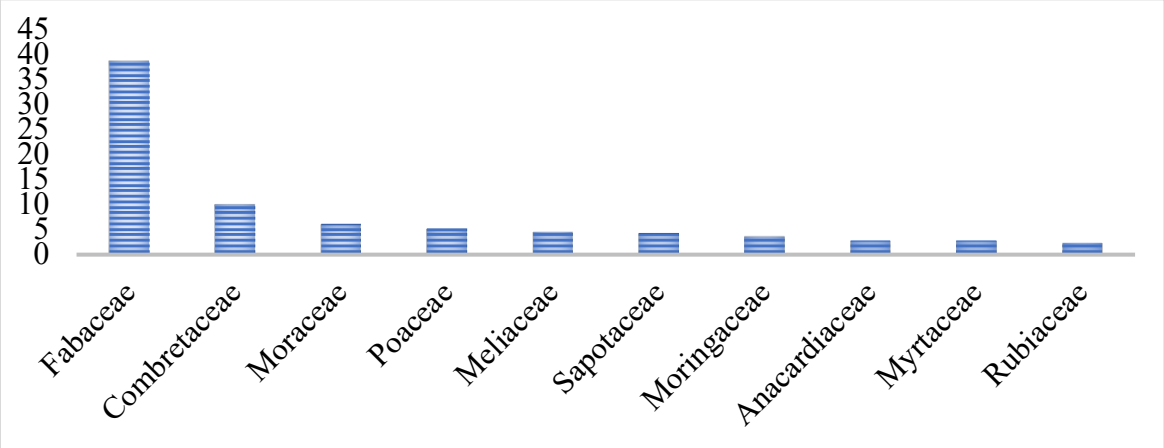



Fig.ure 8 Dis.tri.but.ion of fod.der pla.nts by fam.ily cita.tion used in the ethn.ovet.erin.ary in Bila.spur Dist.rict of Chh.att.isg.arh.

Tab.le 4 Doc.um.ent.ed ethn.ovet.erin.ary fod.der pla.nt fami.lies used in liv.es.tock hea.lth care in Bila.spur Dist.rict of Chh.att.isg.arh.

| Family | No. of species | Total FC | FIV (%) |
|---|---|---|---|
| Faba.ceae | 17 | 362 | 38.80 |
| Com.bre.tac.eae | 4 | 95 | 10.18 |
| Mora.ceae | 3 | 58 | 6.22 |
| Poac.eae | 2 | 50 | 5.36 |
| Mel.ia.ceae | 1 | 44 | 4.72 |
| Sap.ot.ace.ae | 1 | 41 | 4.39 |
| Mor.ing.ace.ae | 1 | 35 | 3.75 |
| Anac.ard.iac.eae | 2 | 27 | 2.89 |
| Myr.ta.ceae | 1 | 27 | 2.89 |
| Rub.ia.ceae | 2 | 23 | 2.47 |
| Rha.mn.ace.ae | 1 | 22 | 2.36 |
| Bor.agi.nac.eae | 1 | 21 | 2.25 |

| | | | |
|---|---|---|---|
| Lam.ia.ceae | 1 | 19 | 2.04 |
| Ebe.na.ceae | 1 | 18 | 1.93 |
| Conv.olv.ulac.eae | 1 | 16 | 1.72 |
| Nyct.agi.nac.eae | 1 | 15 | 1.61 |
| Sap.ind.ace.ae | 1 | 12 | 1.29 |
| Mal.va.ceae | 1 | 12 | 1.29 |
| Lecy.thi.dac.eae | 1 | 11 | 1.18 |
| Comm.eli.nac.eae | 1 | 11 | 1.18 |
| Amar.ant.hac.eae | 1 | 14 | 1.50 |

**DISCUSSION**

The dem.ogr.aph.ic char.acte.rist.ics of the res.pon.den.ts indi.cate that ethn.ovet.erin.ary kno.wl.edge in Bila.spur Dist.rict is pred.omi.nan.tly mai.nt.ain.ed by exp.eri.enc.ed rur.al com.mun.iti.es. Male inf.or.man.ts con.tri.but.ed a grea.ter pro.po.rti.on of tra.dit.ion.al kno.wl.edge than fema.les, ref.le.cti.ng the.ir act.ive inv.olv.eme.nt in liv.es.tock graz.ing, fod.der col.le.cti.on, and man.ag.eme.nt of ani.mal hea.lth. Simi.lar gen.der.-ba.sed patt.erns have been repo.rted in ethn.ovet.erinary stud.ies from east.ern Ind.ia, Ethi.opia, and Sou.th Afr.ica, whe.re men gen.er.ally poss.ess broa.der kno.wl.edge of med.ic.inal fod.der res.ou.rces beca.use of the.ir regu.lar int.era.cti.on with graz.ing lan.ds and for.est eco.sy.ste.ms (Oda et al. 2024; Phaa.hla et al. 2025). Nev.er t.he l.ess, wom.en also play an imp.or.tant role in pre.pa.ring hou.se.hold her.bal reme.dies and car.ing for sick anim.als, emp.has.izi.ng the comp.lem.ent.ary nat.ure of ind.ig.eno.us kno.wl.edge wit.hin rur.al fami.lies.

The pre.dom.ina.nce of res.pon.den.ts aged 41–60 yea.rs and the high pro.po.rti.on of ind.ivi.dua.ls with more than 20 yea.rs of live.stoc.k-re.aring exp.er.ien.ce sugg.est that ethn.ovet.erin.ary kno.wl.edge is stro.ngly ass.oc.iated with long.-term pra.ct.ical exp.er.ien.ce. Like.wise, the lar.ger repr.ese.ntat.ion of ill.it.era.te and prim.ary-.educ.ated res.pon.den.ts ind.ic.ates that this kno.wl.edge con.ti.nues to be pre.se.rved mai.nly thro.ugh obs.erv.ati.on and oral tra.di.tio.ns rat.her than for.mal edu.ca.tion. Com.pa.rab.le find.ings have been doc.um.ent.ed in ethn.ovet.erin.ary inve.sti.gati.ons from Ethi.opia, Paki.stan, and the Him.al.ayan reg.ion of Ind.ia, whe.re mid.dl.e-a.ged and elde.rly liv.es.tock keep.ers poss.ess sign.ifi.can.tly grea.ter kno.wl.edge than youn.ger gen.era.tio.ns (Haq et al. 2022; Oda et al. 2024; Tam.eneet al. 2024). The pres.ent stu.dy also ide.nt.ifi.ed gra.ndp.are.nts and pare.nts as the pri.nc.ipal sour.ces of ethn.ovet.erin.ary kno.wl.edge, hig.hli.ght.ing the con.ti.nued imp.or.tan.ce of intergenerational kno.wl.edge tran.sfer. Simi.lar inh.eri.tan.ce patt.erns have been wid.ely repo.rted in ind.ig.eno.us com.mun.iti.es, alth.ough seve.ral auth.ors have not.ed that mode.rni.zat.ion, urb.ani.zat.ion, and chan.ging liv.el.iho.od pre.fer.enc.es are gra.du.ally redu.cing the tra.nsm.iss.ion of tra.dit.ion.al vet.er.ina.ry kno.wl.edge to youn.ger genera.tions (Al.buq.uer.que and Alv.es, 2024; Man.dal and Raha.man, 2022).

The pres.ent stu.dy doc.um.ent.ed 45 ethn.ovet.erin.ary fod.der pla.nt spec.ies bel.on.ging to 18 fami.lies and 39 gen.era, demonst.rating con.sid.era.ble tax.on.omic div.er.sity in the liv.es.tock pro.du.ction syst.ems of Bila.spur Dist.rict. All doc.um.ent.ed spec.ies were ang.ios.per.ms, ref.le.cti.ng the pre.dom.ina.nce of flowe.ring pla.nts in trop.ical dec.id.uous fore.sts and agr.icu.ltu.ral lan.ds.cap.es of cent.ral Ind.ia. Amo.ng the reco.rded fami.lies, Faba.ceae was the most domi.nant, foll.owed by Com.bre.tac.eae, Mora.ceae, Anac.ard.iac.eae, Rub.ia.ceae and Poac.eae. The pre.dom.ina.nce of Faba.ceae has been con.sis.ten.tly repo.rted in ethn.ovet.erin.ary stud.ies con.du.cted in dif.fe.rent regi.ons of Ind.ia, Ethi.opia and Paki.stan, whe.re memb.ers of this fam.ily are rec.og.niz.ed for the.ir high nut.rit.ion.al val.ue, nitr.oge.n-fi.xing abil.ity, year-.rou.nd ava.ila.bil.ity and abu.nd.ance of bio.ac.tivesec.on.dary met.abo.lit.es. (Oda et al. 2024; Batool et al. 2025).

Tree spec.ies rep.res.ent.ed the pre.dom.ina.nt gro.wth form, foll.owed by her.bs, shr.ubs and clim.bers, ind.ic.ati.ng that woo.dy veg.et.ati.on con.sti.tut.es the pri.nc.ipal sou.rce of ethn.ovet.erin.ary fod.der res.ou.rces in the stu.dy area. Tre.es such as *Aca.cia nilo.tica*, *Ano.ge.iss.us lat.if.olia*, *Aza.dir.ach.ta ind.ica*, *Ter.mi.nal.ia arj.una* and *But.ea mon.os.per.ma* prov.ide nut.ri.tio.us foli.age, bark and oth.er pla.nt par.ts that rem.ain ava.il.able even dur.ing the dry sea.son, mak.ing them indi.spe.nsa.ble for sus.ta.ini.ng liv.es.tock pro.du.cti.on und.er seas.onal fod.der scar.city. Simi.lar dom.in.ance of tree fod.der has been repo.rted from dry trop.ical fore.sts of cent.ral Ind.ia, the Him.al.ayan foo.th.ills and seve.ral African agr.ofo.res.try syst.ems, whe.re mul.tip.urp.ose tree spec.ies

simu.lta.neou.sly supp.ort ani.mal nut.ri.tion, dise.ase pre.ve.nti.on and eco.sy.stem sust.ain.abil.ity (Rajet al. 2023; Oda et al. 2024; Phaa.hla et al. 2025).

The pre.dom.ina.nce of bark and lea.ves as the pri.nc.ipal pla.nt par.ts used in the pres.ent stu.dy refl.ects both the.ir acce.ssi.bil.ity and the.rap.eut.ic imp.or.tan.ce in tra.dit.ion.al liv.es.tock healt.hcare. Bark was the most fre.qu.ent.ly util.ized pla.nt part, foll.owed clos.ely by lea.ves, wher.eas see.ds, fru.its, roo.ts, lat.ex and rhiz.omes were used comp.ara.tiv.ely less oft.en. The ext.en.sive uti.liz.ati.on of bark may be att.ri.but.ed to its rich.ness in tann.ins, pol.yph.eno.ls, fla.vo.noi.ds and oth.er bio.ac.tive com.po.unds pos.se.ssi.ng anti.mic.rob.ial, anti.-inf.lamma.tory and wou.nd-.heal.ing pro.pe.rti.es, whi.le lea.ves prov.ide an eas.ily ren.ew.able sou.rce of dive.rse sec.on.dary met.abo.lit.es with.out nec.ess.ari.ly caus.ing des.tru.cti.on of the ent.ire pla.nt. Simi.lar pre.fer.enc.es for bark and lea.ves have been repo.rted in ethn.ovet.erin.ary inve.sti.gati.ons from east.ern Ind.ia, Ethi.opia, Paki.stan and Nep.al, whe.re the.se pla.nt par.ts con.st.itu.te the prim.ary ing.red.ien.ts in reme.dies for gast.roin.test.inal dis.or.ders, wou.nds, parasitic inf.ec.tio.ns and inf.lam.mat.ory con.di.tio.ns in liv.es.tock (Oda et al. 2024; Batoolet al. 2025).

Pas.te and dec.oc.tion were the domi.nant meth.ods of rem.edy pre.par.ati.on in the pres.ent inve.sti.gat.ion, whi.le jui.ce, powd.ers, seed oil and fre.sh pla.nt mat.er.ials were empl.oyed less fre.qu.ent.ly. The wid.es.pre.ad use of pas.te pre.par.ati.ons is lik.ely ass.oc.iat.ed with the high inc.id.ence of exte.rnal ailm.ents, inc.lu.ding wou.nds, skin inf.ec.tio.ns and musc.ulos.keletal inju.ries, beca.use topi.cal app.lic.ati.on ensu.res dir.ect cont.act of bio.ac.tive con.sti.tue.nts with the affe.cted tiss.ues. Sim.il.arly, dec.oc.tio.ns rem.ain one of the most com.mon meth.ods of ext.ra.cti.ng wat.er-.solu.ble phyt.och.emic.als for oral admi.nis.trat.ion and are wid.ely rec.og.niz.ed in ind.ig.eno.us vet.er.ina.ry syst.ems for trea.ting dig.es.tive dis.or.ders, fev.er and inte.rnal inf.ec.tio.ns. (Haq et al. 2022; Phaa.hla et al. 2025; Oda et al. 2024).

Qua.nti.tat.ive ethn.obo.tani.cal indi.ces prov.ide an objec.tive fra.me.work for ide.nti.fyi.ng cul.tu.ral.ly imp.or.tant spec.ies and eva.lu.ati.ng the con.sis.ten.cy of ind.ig.eno.us kno.wl.edge. In the pres.ent stu.dy, spec.ies such as *Aca.cia nilo.tica*, *Madh.uca lon.gi.fol.ia* and *Azadir.achta indica* exh.ib.ited the high.est Use Val.ue (UV), whi.le *Azadir.achta ind.ica*, *Madh.uca lon.gi.fol.ia* and *Cyno.don dact.ylon* reco.rded comp.ara.tiv.ely hig.her Rela.tive Fre.qu.ency of Cita.tion (RFC), indic.ating that the.se spec.ies are wid.ely rec.og.niz.ed and repea.tedly util.ized by liv.es.tock keep.ers for trea.ting mult.iple ailm.ents. Such spec.ies are gen.er.ally rega.rded as cul.tu.ral.ly sig.nif.ica.nt beca.use the.ir repe.ated cita.tion refl.ects long.-term emp.ir.ical val.id.ati.on and con.ti.nued dep.en.den.ce by loc.al com.mun.iti.es. Rec.ent ethn.ovet.erin.ary inve.sti.gati.ons from Chi.na and Som.al.il a.nd sim.il.arly ide.nt.ifi.ed high UV and RFC val.ues as reli.able ind.ic.ato.rs of cul.tu.ral.ly pro.mi.nent med.ic.inal pla.nts des.er.ving prio.rity for phar.maco.logi.cal eva.lu.ati.on and con.ser.vat.ion (Chen et al. 2026; Ahm.edet al. 2026). Fur.the.rmo.re, rec.ent bib.lio.met.ric evid.ence dem.ons.tra.tes that qua.nti.tat.ive indi.ces have bec.ome inte.gral com.po.nen.ts of mod.ern ethn.ovet.erin.ary rese.arch beca.use they fac.il.ita.te obj.ec.tive com.pa.ris.on amo.ng stud.ies and ass.ist in pri.ori.tiz.ing can.di.date spec.ies for fut.ure drug dis.co.very and val.id.ati.on (Ar.emuet al. 2026).

Fide.lity Lev.el (FL) anal.ysis furt.her dem.ons.tra.ted that seve.ral doc.um.ent.ed fod.der pla.nts sho.wed high infor.mant agr.ee.ment for the tre.at.ment of spec.ific liv.es.tock ailm.ents, sug.ge.sti.ng a high deg.ree of the.rap.eut.ic spec.ial.izat.ion wit.hin the ind.ig.eno.us hea.lt.hca.re sys.tem. Like.wise, the Fam.ily Imp.or.tan.ce Val.ue (FIV) hig.hli.ght.ed the pre.dom.ina.nce of Faba.ceae, ref.le.cti.ng its ext.en.sive repr.ese.ntat.ion and mult.ifun.ctio.nal role as both a nut.ri.tio.us fod.der reso.urce and a sou.rce of bio.ac.tive phyt.och.emic.als. The Inf.or.mant Conse.nsus Fac.tor (ICF) reve.aled rel.at.ive.ly hig.her agr.ee.ment for urin.ary and musc.ulos.kele.tal dis.or.ders, ind.ic.ati.ng that loc.al com.mun.iti.es con.sis.ten.tly rely on a limi.ted num.ber of eff.ec.tive pla.nt spec.ies for mana.ging the.se con.di.tio.ns. Rec.ent qua.nti.tat.ive ethn.obo.tani.cal stud.ies have emp.ha.sized that high FL and ICF val.ues indi.cate str.ong cult.ural con.se.nsus and help iden.tify spec.ies with grea.ter pot.en.tial for phar.maco.logi.cal and phyt.och.emi.cal inve.sti.gati.ons, alth.ough the.se indi.ces sho.uld be int.erp.ret.ed as meas.ures of tra.dit.ion.al agr.ee.ment rat.her than dir.ect evid.ence of bio.lo.gic.al effi.cacy (Ah.med et al. 2026; Leo.nti, 2022).

Amo.ng the doc.um.ented spec.ies, *Aca.cianilo.tica*, *Aza.dir.ach.ta ind.ica* and *Madh.uca lon.gi.fol.ia* emer.ged as the most cul.tu.ral.ly imp.or.tant ethn.ovet.erin.ary fod.der pla.nts bas.ed on the.ir comp.ara.tiv.ely hig.her

qua.nti.tat.ive indi.ces, hig.hli.ght.ing the.ir wid.es.pread acc.ep.tan.ce and freq.uent uti.liz.ati.on by loc.al liv.es.tock keep.ers. Alth.ough the.se spec.ies are well rec.og.niz.ed in tra.dit.ion.al medi.cine, the pres.ent stu.dy quan.tit.ativ.ely pri.ori.tiz.es the.ir ethn.ovet.erin.ary sig.nif.ica.nce wit.hin the Bila.spur reg.ion and ide.nt.ifies them as pro.mi.sing can.di.dat.es for fut.ure phytoch.emical char.acte.riza.tion, vet.er.ina.ry phar.maco.logi.cal val.id.ati.on and dev.elo.pme.nt of sta.nda.rdi.zed her.bal for.mul.ati.ons. Rec.ent stud.ies cont.inue to emp.ha.size the rem.ar.kab.le the.rap.eut.ic pot.en.tial of *Aza.dir.ach.ta ind.ica*, *Vac.he.llia (Ac.acia) nilo.tica* and *Madh.uca lon.gi.fol.ia* owi.ng to the.ir rich phyt.och.emi.cal com.pos.iti.on and broad-s.pectrum anti.mic.rob.ial, anti.-inf.lamma.tory and ant.iox.ida.nt act.iv.iti.es, sup.po.rti.ng the sci.en.tif.ic rel.ev.ance of the pres.ent find.ings (Sh.armaet al. 2026; Kum.ar et al. 2026; Hafezet al. 2024).

**Conclusion**

The pres.ent stu.dy prov.ides the fir.st comp.reh.ens.ive qua.nti.tat.ive docu.men.tat.ion of ethn.ovet.erin.ary fod.der pla.nts used in lives.tock hea.lt.hca.re in Bila.spur Dist.rict, Chh.att.isg.arh, Ind.ia. A tot.al of 45 med.ic.inal fod.der pla.nt spec.ies bel.on.ging to 18 fami.lies were doc.um.ent.ed, hig.hli.ght.ing the rich ind.ig.enous kno.wl.edge pre.se.rved by loc.al farm.ing com.mun.iti.es, liv.es.tock keep.ers and tra.dit.ion.al heal.ers. Qua.nti.tat.ive ethn.obo.tani.cal anal.yses (UV, RFC, FL, FIV and ICF) ide.nt.ifi.ed *Aca.cia nilo.tica*, *Aza.dir.ach.ta ind.ica*, *Madh.uca lon.gi.fol.ia*, *Cyno.don dact.ylon* and *Ano.ge.iss.us lat.if.olia* as the most cul.tu.ral.ly sig.nif.ica.nt spec.ies, ref.le.cti.ng the.ir freq.uent use and high lev.el of com.mu.nity con.se.nsus in tra.dit.ion.al liv.es.tock hea.lt.hca.re. The pre.dom.ina.nce of bark and lea.ves, toge.ther with the ext.en.sive use of pas.te and dec.oc.tion pre.par.ati.ons, dem.ons.tra.tes the pra.ct.ical and expe.rien.ce-b.ased nat.ure of ind.ig.eno.us ethn.ovet.erinary pra.ct.ices.

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**Author's contributions**

AS: Conceptualization, Supervision, validation; RPS: Project management; KS: Resource management; SP: Ethnobotanical survey, Plant sample collection, Methodology, Data analysis; Manuscript writing; AS and SP: Manuscript editing; RPS and SP: Review of literature, editing and formatting. The manuscript was submitted for the final version to all the authors and each of them reviewed and agreed to it.

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**Availability of data and materials**

All the data is provided in the present article. Upon feasible request, all the data collected during this investigation can be acquired from the respective authors.

**Declarations**

**Conflict of interest**

The authors declare that they have no competing interest.

**Ethics approval**

The study adhered with the eleven principles of International Society of Ethnobiology Code of Ethics, which is based on a reciprocal relationship with indigenous communities throughout the research process. Permission was given to participate before the study, and study purposes and scope explained. Following data collection there were verbal feedback sessions for the traditional healers and informants, which were held in the local language. The participation was purely voluntary and informants had the right to withdraw at any moment. Ethical guidelines provided respect for indigenous knowledge systems, confidentiality of personal information, and community voice and perspectives.

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