LEXICAL COMPARISON IN HAYU: A LEXICOSTATISTICAL ANALYSIS

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This article presents the lexicostatistical analysis of Hayu[1] language based on 210 wordlist. There appear different ranges of lexical and phonetic similarities across the five different survey points. Being based on the Mudhajor, the core area of Hayu, exhibits a significant degree of lexical similarity with other points, i.e. Aadmara, Kodre, Wadi and Balingkhola. Such similarity percentages clearly indicate that Hayu spoken in five different points are mutually intelligible to each other. The lexicostatistical data, therefore, show that there is not much lexical variations across the villages where Hayu is spoken.

Keywords: lexicostatistical, phonetic, global correspondence, COG

1. Introduction

Hayu is a Kirati language of Western Himalyish subgroup of Tibeto-Burman group of Sino Tibetan language family. It is mainly spoken in the Ramechhap and Sindhuli districts of Janakpur zone of Nepal. However, they are scattered across the districts like Sarlahi, Jhapa, Morang, Ilam, Udayapur[2] and Kathmandu valley. The Hayu language is one of the shifting languages in Nepal (Eppele et al. 2012: 39). The term 'Hayu' refers to the people as well as the language they speak. They call their language as *wayu da*:*bu* 'Hayu language'. Hayu [ISO 639-3 vay) is recognized as the distinct national language. It is also an indigenous nationality that belongs to endangered group (NFDIN 2002: 20, § 2C). Also it is considered to be closer to the neighboring languages; especially Kirat Rai languages. There exist three language verities in the Hayu speaking area, namely Ramechhaap and Sindhuli (Eppele et al. 2012: 39). The latest National Census of Nepal gives the number of mother tongue speakers as 1520 (CBS 2012).

Hayu is classified on the Expanded Graded Intergenerational Disruption Scale (EGIDS) as (7) *shifting*. This level of language vitality status is defined as, 'the language is used for face-to-face communication within all generations, but it is losing users' (Lewis and Simons 2015). The Hayus are one of the aboriginal peoples of Nepal. The equivalent term they use is *'Wayu, Bayu, Vayu, Wayo*. They call themselves as the descents of the Kirat; however, they are highly influenced by the Hindu culture.

After they were given the allowance by the government in the name of social security, the Hayu people are indifferent in their traditional occupation. In a conversation with a Hayu named Gyan Bahadur in Kodre, he said that they prefer to produce more children in that they get more money from the government on the basis of the number of members in a

[1] The data used in this article are collected during the survey of Hayu language in Ramechhap and Sindhuli district (Rai and Tamang 2017).

[2] In course of the field work we found the Hayu people living in the westernmost part of the Udayapur district (Rai and Tamang 2017).

household three thousand rupees each. Some of them are in the recruitment either in India or Nepal. Most of them are found to have changed their surnames and switched to Rai. Some others are in Kahtmandu valley working in various fields as a labor.

2. Research methodology

The methodology comprises the collection of wordlists and tools used in the analysis of the wordlists. First, the standardized wordlist of 210 words were elicited in the five different points, namely, Wadi, Mudhajor, Balingkhola, Kodre and Aadmara from the mother tongue speakers (grown up in the their locality, representing different sex, age and literacy), compiled them with phonetic transcriptions and cross-checked from other speakers from the same site. Secondly, the words from the wordlists were entered to the WordSurv (Wimbish 1989), a tool primarily used to determine the genetic relationship of the languages or dialects (Appendix 1). Thirdly, the words entered in the WordSurv were exported as WordSurv 6 XML file to Cog for the comparison of the words collected in the five different points in terms of the lexical and phonetic similarity.

Cog is a tool for comparing languages using lexicostatistics and comparative linguistics procedures. It can be used to automate much of the process of comparing wordlists from different language varieties. Table 1 shows the five different survey points of Hayu language.

Table 1: Survey points of Hayu

	Locality	Municipality	District
1	Wadi	Ramechhap Municipality	Ramechhap, Sindhuli
2	Mudhajor	Ramechhap Municipality	
3	Balingkhola	Ramechhap Municipality	
4	Kodre	Kamalamai Municipality	
5	Adhmara	Kamalamai Municipality	

2.1 Evaluation criteria

Around 60% has been generally taken as a cutoff point for the evaluation of lexical similarity (Regmi 2013: 63). However**,** the 60% threshold may not always be a strict cutoff point. Using such a method, the speech varieties having a lexical similarity less than 60% are considered as different languages. However, languages (or dialects) with around 60% or greater lexical similarity should be tested for intelligibility using another tool referred to as Recorded Text Test (RTT). The attitudes and the perceptions of the speakers are also important factors. Table 2 presents the evaluation criteria of the lexical similarity percentages.

Table 2: Evaluation criteria of the lexical similarity

	Lexical similarity (%)	Evaluation	Remarks
1.	60% similarity	A cutoff point/threshold for the evaluation	May not always be a strict cutoff point
2.	Less than 60% similarity	Different languages	-

3.	60% or more similarity	Different languages or dialects of the same language	Intelligibility testing is required by using RTT
4.	Higher than 85% similarity	Speech varieties likely to be related dialects	-
5.	Higher than 95% similarity	Same language	-

3. Lexical comparison

In this section, we compare and analyze the 210 wordlist using a computer software COG, a recently developed program for lexical and phonetic comparison between and among dialects and languages. Cog allows us to compare and analyze wordlists from different language varieties using an iterative approach. Using this program we can quickly make sense of the data and then refine the wordlists and more settings, improving the comparison results and the understanding of the varieties at each step. We, first, present the lexical similarity in percentage among the five different points in the Hayu speech community and show then phonetic similarities among the survey points.

3.1 Lexical similarity

Lexical similarity in this study refers to the items not strictly following the phonetic realization of lexicon. Hayu presents different arrays of lexical similarity percentages among the survey points.

Table 3 presents the lexical similarity in percentage among the survey points in the Hayu speech community in the Ramechhap and Sindhuli districts.

Table 3: Lexical similarity among the key points of Hayu

	Balingkhola	Aadmara	Konre	Wadi	Mudhajor
Balingkhola	100%	84%	82%	84%	83%
Aadmara	84%	100%	91%	82%	82%
Kodre	82%	91%	100%	80%	81%
Wadi	84%	82%	80%	100%	85%
Mudhajor	83%	82%	81%	85%	100%

Table 3 shows that Mudhajor, the core area of Hayu, exhibits a significant degree (ranging from 81% to 85%) of lexical similarity with other points, i.e. Wadi, Balingkhola, Kodre and Aadmara. Of the 210 words, Mudhajor exhibits the highest similarity with Wadi and the least similarity with Kodre. Until intelligibility testing is carried out by using RTT, only with the help of the 210 wordlist comparison may not determine whether it is form of different language or a dialect. But the lexical comparison is necessarily taken as one of the components to identify whether it is a distinct language or a dialect.

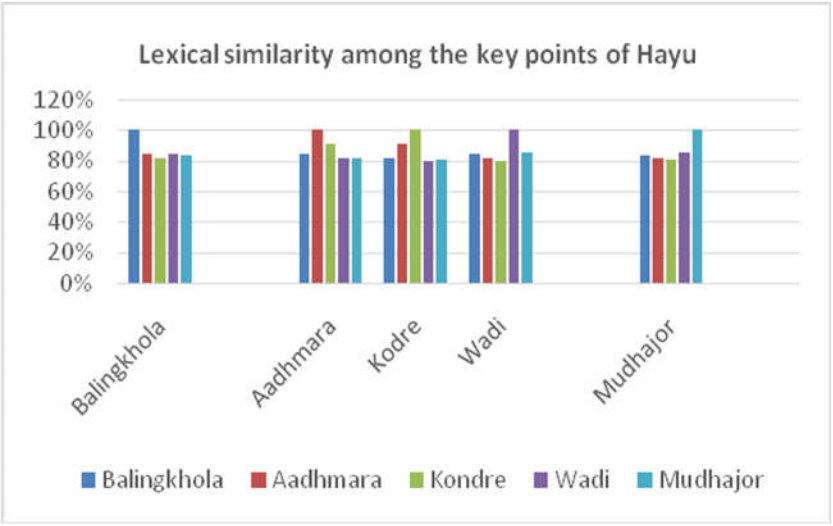


Figure 1: Lexical similarity among the key points of Hayu

Figure 1 presents the lexical similarities among the five different points in Hayu.

3.2 Phonetic similarity

Hayu presents different ranges of phonetic similarity percentages among the five different points. Unlike the lexical, phonetic similarity in this study means the phonetic realization of the lexicon compared each survey points: Balingkhola, Aadmara, Kodre, Wadi and Mudhajor.

Table 4 presents the phonetic similarity percentage among the five points in the Hayu speech community.

Table 4: Phonetic similarity in the five key points in the Hayu speech community (in percentage)

	Balingkhola	Aadmara	Kodre	Wadi	Mudhajor
Balingkhola	100%	86%	85%	85%	85%
Aadmara	86%	100%	86%	82%	82%
Kodre	85%	86%	100%	81%	80%
Wadi	85%	82%	81%	100%	92%
Mudhajor	85%	82%	80%	92%	100%

Table 4 shows that as Mudhajor, the core area of Hayu exhibits a significant degree (ranging from 80 % to 92 %) of phonetic similarity with other points, i.e. Aadmara, Kodre, Wadi, Balingkhola. To be precise, Mudhajor shares 85% with Balingkhola, 82% with Aadmara, 80% with Kodre, and 92% with Wadi. It shows that Mudhajor shares the highest phonetic similarity with Kodre and least with Wadi.

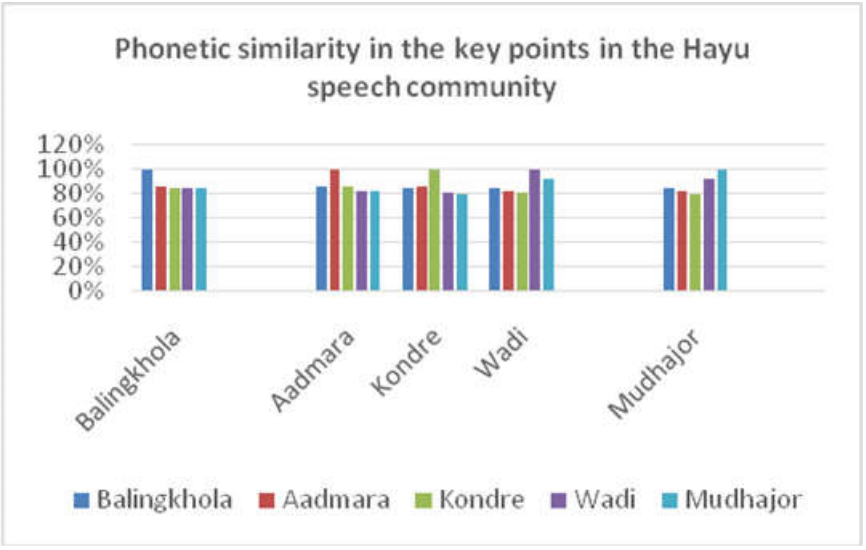


Figure 2: Phonetic similarity in the key points in the Hayu Speech community

Figure 1 presents the phonetic similarities among the five different points in Hayu.

4. Hierarchical graphs

The lexicostatistical result of five different points in Hayu may be analyzed by hierarchical graph. Such graph displays the genetic relatedness of language verities based on lexicostatistical similarity.

There are two methods for mapping the graphs: UPGMA (Unweighted pair group method with arithmetic mean) and neighbor-joining. The UPGMA method is such a method that helps to construct the rooted tree base on a pairwise similarity matrix. In this method, at each step, the nearest two clusters are combined into a higher-level cluster. Dendogram 1 presents a hierarchical graph showing a rooted base tree.

Dendogram 1: Lexical similarity matrix

Lexical Phonetic

Dendogram 1 (a-b) shows that there basically two speech verities: a) Wadi b) Mudhajor c) Balingkhola in the one group whereas a) Kodre and b) Aadmara as another group. The points Wadi, Mudhajor and Balingkhola share the closer lexical and phonetic similarity.

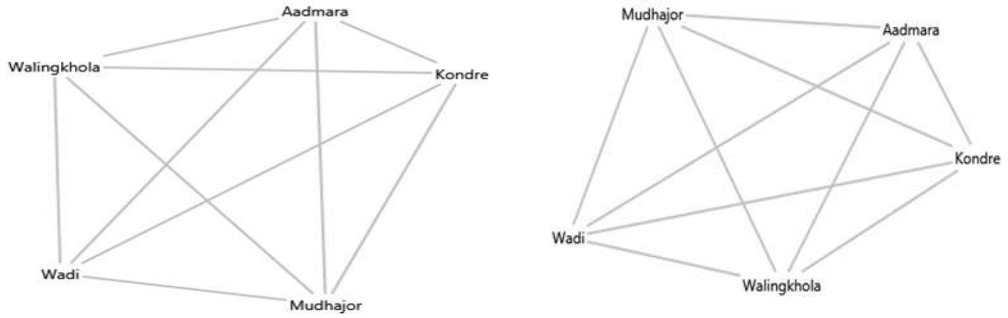
Similarly, the network graph lays out the language varieties, where similar varieties will tend to cluster together. This can be represented in the form of lexical and phonetic network graph in Dendogram 1 (a-b).

5. Network relations

The network relations show the relationship of the languages in two ways: first by showing the clusters of close languages and, secondly, by showing how they are nearer to each other.

In this network graph, all the verities within Hayu are compared to each other. The network graph shows that verities like Aadmara and Kodre seem to be closer than those of other verities. Similarly the verities like Mudhajor and Wadi tend to appear closer. On the other hand, Walingkhola is closer to the earlier group Aadmara and Kodre.

Figure 2 presents the similarity matrix network graph lexically and phonetically.



Lexical Phonetic

Figure 2: Lexical and phonetic similarity matrix network graph

In a Figure 2 (a-b), the graph shows that the clusters of similar varieties and their connection. The speech community Wadi, Mudhajor and Balingkhola seem to be closer whereas the Speech community Kodre and Aadmara stand separately. This can be realized lexically. Unlike lexical network, the phonetic network seems to be a bit different since the point Mudhajor is up in the left corner and shows the close relation with Wadi and Walingkhola.

6. Global correspondences

The global correspondence displays all of the segments that occur in a particular syllable position across the wordlists from all the five different points. Edges indicate that at least one correspondence has occurred between those two segments. The thickness of the edge indicates the number of correspondences.

Figure 3 presents an IPA consonant chart (column headers are place of articulation; rows are manner of articulation) in their onset position.

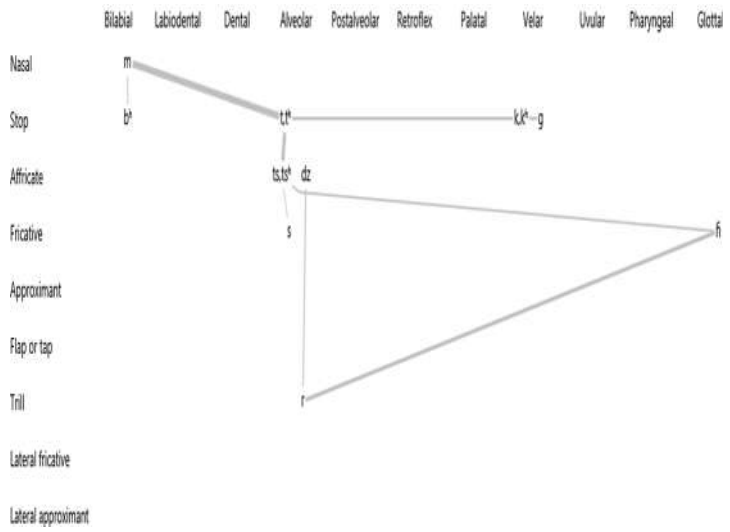


Figure 3: Global correspondences of Hayu phonemes in onset position

Figure 3 allows us to get a good sense of correspondences that occur across multiple variety pairs in Hayu. The phoneme */m/* and */t/,/tʰ/* indicate the thickness of the the segments share the most correspondence onset position . Also the thickness of the edges can be seen in the phonemes */k/, kʰ/,/g/* with /t/tʰ/ and */ts/, /tsʰ/, /dz/* with */h/*. Figure 4 presents the corresponding of the different phonemes in their nucleus position.

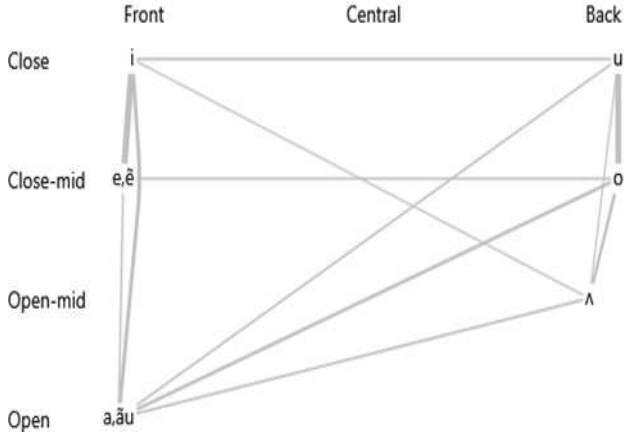


Figure 4: Global correspondence of Hayu phonemes in nucleus position

Figure 4 shows the vowels phonemes of Hayu in nucleus position of the syllables. The thickness of the edge indicates the number of correspondences. The frequency of vowels

like close /i/ , close-mid/e/,/ẽ/, open /a/,ã/ tend to appear as the nucleus position in the comparison to the wordlists. Also the back vowel /u/ , /o/ and /ʌ/ are realized as the nuclease position.

7. Conclusion

Hayu is one of the Kirati languages of Western Himalyish subgroup of Tibeto-Burman group of Sino Tibetan language family. While observing the ranges of lexical and phonetic similarities across the five different survey points being based on 210 wordlist, Mudhajor, the core area of Hayu, exhibits a significant degree of lexical similarity with other points, i.e. Aadmara, Kodre, Wadi and Balingkhola. Such similarity percentages clearly indicate that Hayu spoken in five different points are mutually intelligible to each other. Being based on the Mudhajor, the core area of Hayu, it exhibits a significant degree (ranging from 81 % to 85%) of lexical similarity with other points, i.e. Aadmara, Kodre, Wadi and Balingkhola. Of the 210 words, Mudhajor exhibits the highest similarity with Wadi and the least similarity with Kodre and Aadmara. The lexicostatistical data show that there is not much lexical variations among these five different points. Phonetically, Mudhajor, the core area of Hayu, exhibits a significant degree (ranging from 80% to 92%) of phonetic similarity with other points, i.e. Aadmara, Kodre, Wadi and Balingkhola.

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Appendix

Lexical items from five different points

S.N.	English	Walingkhola	Kodre	Aadmara	Mudhajor	Wadi
1.	body	*sʌrir*	*dziu*	*dziu*	*sʌrir*	*sʌrir*
2.	head	*puʔtsʰi*	*puʔtsʰi*	*puʔtsʰi*	*puʔtsʰi*	*puʔtsʰi*
3.	hair	*som*	*sʌm*	*sʌm*	*som*	*som*
4.	face	*mukʌtsʰeu*	*gala*	*gala*	*mukʌtsʰe*	*mukʌtsʰeu*
5.	eye	*mekʰ*	*mekʰ*	*mekʰ*	*mekʰ*	*mekʰ*
6.	ear	*noktsʰum*	*noktsʰum*	*noktsʰum*	*noktsʰu*	*noktsʰu*
7.	nose	*tsʰʔno*	*tsʰʔno*	*tsʰʔno*	*tsʰʔno*	*tsʰʔno*
8.	mouth	*muktsʰu*	*muktsʰu*	*muktsʰu*	*muktsʰu*	*muktsʰu*
9.	teeth	*lu*	*lu*	*lu*	*lu*	*lu*
10.	tongue	*leŋa*	*liŋa*	*liŋa*	*liŋa*	*leŋa*
11.	breast	*tsʰãti*	*tsʰãti*	*tsʰãti*	*tsʰãti*	*tsʰãti*
12.	belly	*bʰuʔɖi*	*bʰuʔɖi*	*bʰuʔɖi*	*bʰuʔɖi*	*bʰuʔɖi*
13.	arm/ hand	*got*	*got*	*got*	*got*	*got*
14.	elbow	*kuina*	*kurkutsa*	*kurkutsa*	*kuina*	*kuina*
15.	palm	*ɦʌtkela*	*ɦʌtkela*	*ɦʌtkela*	*ɦʌtkela*	*ɦʌtkela*
16.	finger	*ʌmla*	*ãula*	*ãula*	*ʌmla*	*ʌmla*
17.	fingernail	*dimen*	*dimen*	*dimen*	*dimen*	*dimen*
18.	leg	*le*	*le*	*le*	*le*	*le*
19.	skin	*kuktso*	*kuktso*	*kuktso*	*kuktso*	*kuktso*
20.	bone	*ru*	*ru*	*ru*	*ru*	*ru*
21.	heart	*tʰum*	*tʰum*	*tʰum*	*tʰum*	*tʰum*
22.	blood	*ɦi*	*ɦi*	*ɦi*	*ɦi*	*ɦi*
23.	urine	*tsepi*	*tsepi*	*tsepi*	*tsepi*	*tsepi*
24.	feces	*eʔpʰi*	*eʔpʰi*	*eʔpʰi*	*eʔpʰi*	*eʔpʰi*
25.	village	*gãu*	*gãu*	*gãu*	*gãu*	*gãu*
26.	house	*kem*	*kem*	*kem*	*kem*	*kem*
27.	roof	*tsʰana*	*tsʰana*	*tsʰana*	*tsʰana*	*tsʰana*
28.	door	*kamu*	*kamu*	*kamu*	*kamu*	*kamu*
29.	firewood	*siŋ*	*siŋ*	*siŋ*	*siŋ*	*siŋ*
30.	broom	*bʰokim*	*bʰokim*	*bʰokim*	*bʰokim*	*bʰokim*
31.	mortar	*silouɻa*	*silouɻa*	*silouɻa*	*silouɻa*	*silouɻa*
32.	pestle	*loɦora*	*loɦora*	*loɦora*	*loɦora*	*loɦora*
33.	hammer	*hʌmbʌr*	*hʌmbʌr*	*hʌmbʌr*	*hʌmbʌr*	*hʌmbʌr*
34.	knife	*tsʌkku*	*tsʌkku*	*tsʌkku*	*tsʌkku*	*tsʌkku*
35.	axe	*kʰojo*	*kʰojo*	*kʰojo*	*kʰojo*	*kʰojo*
36.	rope	*duri*	*duri*	*duri*	*duri*	*duri*
37.	thread	*dʰago*	*dʰago*	*dʰago*	*dʰago*	*dʰago*

38.	needle	*tsʰutsui*	*tsʰutsui*	*tsʰutsui*	*tsʰutsui*	*tsʰutsui*
39.	cloth	*dzewa*	*dzewa*	*dzewa*	*dzewa*	*dzewa*
40.	ring	*ʌmtʰi*	*ʌmtʰi*	*ʌmtʰi*	*ʌmtʰi*	*ʌmtʰi*
41.	sun	*nʌmʌ*	*nʌmʌ*	*nʌmʌ*	*nʌmʌ*	*nʌmʌ*
42.	moon	*tsolo*	*tsolo*	*tsolo*	*tsolo*	*tsolo*
43.	sky	*akas*	*akas*	*akas*	*akas*	*akas*
44.	star	*tara*	*tara*	*tara*	*tara*	*tara*
45.	rain	*bʌrsa*	*bʌrsa*	*bʌrsa*	*bʌrsa*	*bʌrsa*
46.	water	*ti*	*ti*	*ti*	*ti*	*ti*
47.	river	*kosi*	*kosi*	*kosi*	*kosi*	*kosi*
48.	cloud	*kuiro*	*kuiro*	*kuiro*	*kuiro*	*kuiro*
49.	lightening	*tsʌmkainʌm*	*tsʌmkainʌm*	*tsʌmkainʌm*	*tsʌmkainʌm*	*tsʌmkainʌm*
50.	rainbow	*mutstsem*	*mutstsem*	*mutstsem*	*mutstsem*	*mutstsem*
51.	wind	*ɦudzuŋ*	*ɦudzuŋ*	*ɦudzuŋ*	*ɦudzuŋ*	*ɦudzuŋ*
52.	stone	*luʔpʰ*	*luʔpʰ*	*luʔpʰ*	*luʔpʰ*	*luʔpʰ*
53.	path	*lom*	*lom*	*lom*	*lom*	*lom*
54.	sand	*baluwa*	*baluwa*	*baluwa*	*baluwa*	*baluwa*
55.	fire	*meʔ*	*meʔ*	*meʔ*	*meʔ*	*meʔ*
56.	smoke	*kulu*	*kulu*	*kulu*	*kulu*	*kulu*
57.	ash	*dawaŋmi*	*dawaŋmi*	*dawaŋmi*	*dawaŋmi*	*dawaŋmi*
58.	mud	*koʔ*	*koʔ*	*koʔ*	*koʔ*	*koʔ*
59.	dust	*dʰulo*	*dʰulo*	*dʰulo*	*dʰulo*	*dʰulo*
60.	gold	*sun*	*sun*	*sun*	*sun*	*sun*
61.	tree	*pʰum*	*pʰum*	*pʰum*	*pʰum*	*pʰum*
62.	leaf	*lo*	*lo*	*lo*	*lo*	*lo*
63.	root	*dzʌra*	*dzʌra*	*dzʌra*	*dzʌra*	*dzʌra*
64.	thorn	*su*	*su*	*su*	*su*	*su*
65.	flower	*pu*	*pu*	*pu*	*pu*	*pu*
66.	fruit	*semi*	*semi*	*semi*	*semi*	*semi*
67.	mango	*dzuli*	*dzuli*	*dzuli*	*dzuli*	*dzuli*
68.	banana	*risa*	*risa*	*risa*	*risa*	*risa*
69.	wheat(husked)	*gʌɦu*	*gʌɦu*	*gʌɦu*	*gʌɦu*	*gʌɦu*
70.	barley	*dzou*	*dzou*	*dzou*	*dzou*	*dzou*
71.	rice (husked)	*tsʰjaŋra*	*tsʰjaŋra*	*tsʰjaŋra*	*tsʰjaŋra*	*tsʰjaŋra*
72.	potato	*alu*	*alu*	*alu*	*alu*	*alu*
73.	eggplant	*bʰenʈa*	*bʰenʈa*	*bʰenʈa*	*bʰenʈa*	*bʰenʈa*
74.	groundnut	*bʌdam*	*bʌdam*	*bʌdam*	*bʌdam*	*bʌdam*
75.	chili	*sotsʰeŋpoi*	*sotsʰeŋpoi*	*sotsʰeŋpoi*	*sotsʰeŋpoi*	*sotsʰeŋpoi*
76.	turmeric	*ɦʌrdi*	*ɦʌrdi*	*ɦʌrdi*	*ɦʌrdi*	*ɦʌrdi*
77.	garlic	*lasun*	*lasun*	*lasun*	*lasun*	*lasun*
78.	onion	*pyadz*	*pyadz*	*pyadz*	*pyadz*	*pyadz*
79.	cauliflower	*kauli*	*kauli*	*kauli*	*kauli*	*kauli*
80.	tomato	*belouti*	*belouti*	*belouti*	*belouti*	*belouti*
81.	cabbage	*b?nda*	*b?nda*	*b?nda*	*b?nda*	*b?nda*
82.	oil	*ki*	*ki*	*ki*	*ki*	*ki*

83.	salt	*tsja*	*tsja*	*tsja*	*tsja*	*tsja*
84.	meat	*kun*	*kun*	*kun*	*kun*	*kun*
85.	fat (of meat)	*boso*	*boso*	*boso*	*boso*	*boso*
86.	fish	*mats^{h}a*	*mats^{h}a*	*mats^{h}a*	*mats^{h}a*	*mats^{h}a*
87.	chicken	*tsijaʔ*	*tsijaʔ*	*tsijaʔ*	*tsijaʔ*	*tsijaʔ*
88.	egg	*tsalum*	*tsalum*	*tsalum*	*tsalum*	*tsalum*
89.	cow	*gai*	*gai*	*gai*	*gai*	*gai*
90.	buffalo	*p^{h}itam*	*p^{h}itam*	*p^{h}itam*	*p^{h}itam*	*p^{h}itam*
91.	milk	*dud^{h}*	*dud^{h}*	*dud^{h}*	*dud^{h}*	*dud^{h}*
92.	horns	*ruŋ*	*ruŋ*	*ruŋ*	*ruŋ*	*ruŋ*
93.	tail	*mun*	*mun*	*mun*	*mun*	*mun*
94.	goat	*tseli*	*tseli*	*tseli*	*tseli*	*tseli*
95.	dog	*uri*	*uri*	*uri*	*uri*	*uri*
96.	snake	*ɦobu*	*ɦobu*	*ɦobu*	*ɦobu*	*ɦobu*
97.	monkey	*rints^{h}eu*	*rints^{h}eu*	*rints^{h}eu*	*rints^{h}eu*	*rints^{h}eu*
98.	mosquito	*lamkue*	*lamkue*	*lamkue*	*lamkue*	*lamkue*
99.	ant	*tsikibuʔla*	*tsikibuʔla*	*tsikibuʔla*	*tsikibuʔla*	*tsikibuʔla*
100.	spider	*makura*	*makura*	*makura*	*makura*	*makura*
101.	name	*nam*	*nam*	*nam*	*nam*	*nam*
102.	man	*sintoŋ*	*sintoŋ*	*sintoŋ*	*sintoŋ*	*sintoŋ*
103.	woman	*mistso*	*mistso*	*mistso*	*mistso*	*mistso*
104.	child	*tsola*	*tsola*	*tsola*	*tsola*	*tsola*
105.	father	*uʔpo*	*uʔpo*	*uʔpo*	*uʔpo*	*uʔpo*
106.	mother	*uʔmo*	*uʔmo*	*uʔmo*	*uʔmo*	*uʔmo*
107.	older brother	*bulu*	*bulu*	*bulu*	*bulu*	*bulu*
108.	younger brother	*balu*	*balu*	*balu*	*balu*	*balu*
109.	older sister	*nono*	*nono*	*nono*	*nono*	*nono*
110.	younger sister	*diu*	*diu*	*diu*	*diu*	*diu*
111.	son	*tao*	*tao*	*tao*	*tao*	*tao*
112.	daughter	*tami*	*tami*	*tami*	*tami*	*tami*
113.	husband	*rostso*	*rostso*	*rostso*	*rostso*	*rostso*
114.	wife	*roʔmi*	*roʔmi*	*roʔmi*	*roʔmi*	*roʔmi*
115.	boy	*to*	*to*	*to*	*to*	*to*
116.	girl	*tame*	*tame*	*tame*	*tame*	*tame*
117.	day	*din*	*din*	*din*	*din*	*din*
118.	night	*jeksa*	*jeksa*	*jeksa*	*jeksa*	*jeksa*
119.	morning	*numo*	*numo*	*numo*	*numo*	*numo*
120.	noon	*nuʔme*	*nuʔme*	*nuʔme*	*nuʔme*	*nuʔme*
121.	evening	*jeksadumi*	*jeksadumi*	*jeksadumi*	*jeksadumi*	*jeksadumi*
122.	yesterday	*listson*	*listson*	*listson*	*listson*	*listson*
123.	today	*tiri*	*tiri*	*tiri*	*tiri*	*tiri*
124.	tomorrow	*nukon*	*nukon*	*nukon*	*nukon*	*nukon*
125.	week	*sata*	*sata*	*sata*	*sata*	*sata*
126.	month	*mʌina*	*mʌina*	*mʌina*	*mʌina*	*mʌina*

127.	year	*bʌrsʌ*	*bʌrsʌ*	*bʌrsʌ*	*bʌrsʌ*	*bʌrsʌ*
128.	old	*purano*	*purano*	*purano*	*purano*	*purano*
129.	new	*nesem*	*nesem*	*nesem*	*nesem*	*nesem*
130.	good	*dimtsome*	*dimtsome*	*dimtsome*	*dimtsome*	*dimtsome*
131.	bad	*madimtsom*	*madimtsom*	*madimtsom*	*madimtsom*	*madimtsom*
132.	wet	*natsoŋ*	*natsoŋ*	*natsoŋ*	*natsoŋ*	*natsoŋ*
133.	dry	*sukkʰa*	*sukkʰa*	*sukkʰa*	*sukkʰa*	*sukkʰa*
134.	long	*pʰita*	*pʰita*	*pʰita*	*pʰita*	*pʰita*
135.	short	*itʰapi*	*itʰapi*	*itʰapi*	*itʰapi*	*itʰapi*
136.	hot	*tato*	*tato*	*tato*	*tato*	*tato*
137.	cold	*dzusa*	*dzusa*	*dzusa*	*dzusa*	*dzusa*
138.	right	*daine*	*daine*	*daine*	*daine*	*daine*
139.	left	*debre*	*debre*	*debre*	*debre*	*debre*
140.	near	*kʰewa*	*kʰewa*	*kʰewa*	*kʰewa*	*kʰewa*
141.	far	*kʰoʔlam*	*kʰoʔlam*	*kʰoʔlam*	*kʰoʔlam*	*kʰoʔlam*
142.	big	*kʰõta*	*kʰõta*	*kʰõta*	*kʰõta*	*kʰõta*
143.	small	*dʰumti*	*dʰumti*	*dʰumti*	*dʰumti*	*dʰumti*
144.	heavy	*lista*	*lista*	*lista*	*lista*	*lista*
145.	light	*oksa*	*oksa*	*oksa*	*oksa*	*oksa*
146.	above	*õne*	*õne*	*õne*	*õne*	*õne*
147.	below	*ɦute*	*ɦute*	*ɦute*	*ɦute*	*ɦute*
148.	white	*duwaŋmi*	*duwaŋmi*	*duwaŋmi*	*duwaŋmi*	*duwaŋmi*
149.	black	*kʰaktseŋmi*	*kʰaktseŋmi*	*kʰaktseŋmi*	*kʰaktseŋmi*	*kʰaktseŋmi*
150.	red	*ɦitsʰiŋmi*	*ɦitsʰiŋmi*	*ɦitsʰiŋmi*	*ɦitsʰiŋmi*	*ɦitsʰiŋmi*
151.	one	*kolu*	*kolu*	*kolu*	*kolu*	*kolu*
152.	two	*nakuŋ*	*nakuŋ*	*nakuŋ*	*nakuŋ*	*nakuŋ*
153.	three	*sim*	*sim*	*sim*	*sim*	*sim*
154.	four	-	-	-	-	-
155.	five	-	-	-	-	-
156.	six	-	-	-	-	-
157.	seven	-	-	-	-	-
158.	eight	-	-	-	-	-
159.	nine	-	-	-	-	-
160.	ten	-	-	-	-	-
161.	eleven	-	-	-	-	-
162.	twelve	-	-	-	-	-
163.	twenty	-	-	-	-	-
164.	one hundred	-	-	-	-	-
165.	who	*suno*	*suno*	*suno*	*suno*	*suno*
166.	what	*mitsi*	*mitsi*	*mitsi*	*mitsi*	*mitsi*
167.	where	*ɦani*	*ɦani*	*ɦani*	*ɦani*	*ɦani*
168.	when	*ɦakʰi*	*ɦakʰi*	*ɦakʰi*	*ɦakʰi*	*ɦakʰi*
169.	how many	*ɦaatʰa*	*ɦaatʰa*	*ɦaatʰa*	*ɦaatʰa*	*ɦaatʰa*
170.	which	*ɦanam*	*ɦanam*	*ɦanam*	*ɦanam*	*ɦanam*
171.	this	*i*	*i*	*i*	*i*	*i*

172.	that	*miʔ*	*miʔ*	*miʔ*	*miʔ*	*miʔ*
173.	these	*ikʰata*	*ikʰata*	*ikʰata*	*ikʰata*	*ikʰata*
174.	those	*mikʰata*	*mikʰata*	*mikʰata*	*mikʰata*	*mikʰata*
175.	same	*miʔ*	*miʔ*	*miʔ*	*miʔ*	*miʔ*
176.	different	*tsʰalim*	*tsʰalim*	*tsʰalim*	*tsʰalim*	*tsʰalim*
177.	whole	*koʔnamuti*	*koʔnamuti*	*koʔnamuti*	*koʔnamuti*	*koʔnamuti*
178.	broken	*reʔlekat?m*	*reʔlekat?m*	*reʔlekat?m*	*reʔlekat?m*	*reʔlekat?m*
179.	few	*denineretso*	*denineretso*	*denineretso*	*denineretso*	*denineretso*
180.	many	*sunnaretso*	*sunnaretso*	*sunnaretso*	*sunnaretso*	*sunnaretso*
181.	all	*dzakʰm*	*dzakʰm*	*dzakʰm*	*dzakʰm*	*dzakʰm*
182.	to eat	*dzama*	*dzama*	*dzama*	*dzama*	*dzama*
183.	to bite	*kʰawapma*	*kʰawapma*	*kʰawapma*	*kʰawapma*	*kʰawapma*
184.	to be hungry	*sukma*	*sukma*	*sukma*	*sukma*	*sukma*
185.	to drink	*tuʰma*	*tuʰma*	*tuʰma*	*tuʰma*	*tuʰma*
186.	to be thirsty	*tidukma*	*tidukma*	*tidukma*	*tidukma*	*tidukma*
187.	to sleep	*imma*	*imma*	*imma*	*imma*	*imma*
188.	to lie	*pultema*	*pultema*	*pultema*	*pultema*	*pultema*
189.	to sit	*muʔma*	*muʔma*	*muʔma*	*muʔma*	*muʔma*
190.	to give	*ɦaama*	*ɦaama*	*ɦaama*	*ɦaama*	*ɦaama*
191.	to burn	*ɦimma*	*ɦimma*	*ɦimma*	*ɦimma*	*ɦimma*
192.	to die	*meʔtema*	*meʔtema*	*meʔtema*	*meʔtema*	*meʔtema*
193.	to kill	*seʔtma*	*seʔtma*	*seʔtma*	*seʔtma*	*seʔtma*
194.	to fly	*bʌnma*	*bʌnma*	*bʌnma*	*bʌnma*	*bʌnma*
195.	to walk	*kʰokma*	*kʰokma*	*kʰokma*	*kʰokma*	*kʰokma*
196.	to run	*lonma*	*lonma*	*lonma*	*lonma*	*lonma*
197.	to go	*lakma*	*lakma*	*lakma*	*lakma*	*lakma*
198.	to come	*pʰima*	*pʰima*	*pʰima*	*pʰima*	*pʰima*
199.	to speak	*gonma*	*gonma*	*gonma*	*gonma*	*gonma*
200.	to hear/listen	*tʰakma*	*tʰakma*	*tʰakma*	*tʰakma*	*tʰakma*
201.	to look	*tsuʔakma*	*tsuʔakma*	*tsuʔakma*	*tsuʔakma*	*tsuʔakma*
202.	I	*aŋ*	*aŋ*	*aŋ*	*aŋ*	*aŋ*
203.	you (informal)	*uŋ*	*uŋ*	*uŋ*	*uŋ*	*uŋ*
204.	you (formal)	*gon*	*gon*	*gon*	*gon*	*gon*
205.	he	*miʔ*	*miʔ*	*miʔ*	*miʔ*	*miʔ*
206.	she	*miʔ*	*miʔ*	*miʔ*	*miʔ*	*miʔ*
207.	we (inclusive)	*gonnuŋ*	*gonnuŋ*	*gonnuŋ*	*gonnuŋ*	*gonnuŋ*
208.	we (exclusive)	*ãkikʰata*	*ãkikʰata*	*ãkikʰata*	*ãkikʰata*	*ãkikʰata*
209.	you (plural)	*gonekʰata*	*gonekʰata*	*gonekʰata*	*gonekʰata*	*gonekʰata*
210.	they	*mikʰata*	*mikʰata*	*mikʰata*	*mikʰata*	*mikʰata*