



Research Paper No. 26



**GENETIC STUDY
ON
KONDA KAPU, KONDA DORA AND PLAINS KAPU**

D. R. PRATAP, M. A.,
Director

V. V. RAMANA RAO, M. Sc.,
Research Officer

O. S. V. D. PRASAD, M. Sc.,
Research Assistant

**TRIBAL CULTURAL RESEARCH AND TRAINING INSTITUTE
TRIBAL WELFARE DEPARTMENT
GOVERNMENT OF ANDHRA PRADESH
HYDERABAD - 500 034.
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I N T R O D U C T I O N.

AS humans we are defined by differences as well as our similarities. Genetical studies by giving us insight into the nature of our similarities and differences provide a base for rational appreciation of each other and for rational interaction. There are two attributes common to the usual differentiation of populations, heritable biological differences and cultural differences as might be found in language, dress or economic system. Heritable differences are not affected by environment and form the important basis of differentiation of different populations.

The agency areas in Andhra Pradesh are inhabited by 33 tribal communities. The hill tracts in Visakhapatnam, Srikakulam, East and West Godavari Districts are the principal abode of several such communities. Konda Kapus and Konda Doras are important among them. Below the eastern ranges i.e., at the foot of the hills or plains of these ranges, there is a caste known

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The agency areas in Andhra Pradesh are inhabited by 33 tribal communities. The hill tracts in Visakhapatnam, Srikakulam, East and West Godavari Districts are the principal abode of several such communities. Konda Kapus and Konda Doras are important among them. Below the eastern ranges i.e., at the foot of the hills or plains of these ranges, there is a caste known

as Kapu. The Konda Kapus and Konda Doras are about 38, 126 and 101,556 in number respectively as per 1971 Census.

Some Konda Kapus in Srikakulam and Visakhapatnam Districts speak a corrupt form of Oriya and who are in plains speak Telugu. They are mostly cultivators and those in hill areas practise podu cultivation. Those who are living along with other Telugu speaking people are completely acculturated. The Konda Doras who are cultivators, are also known as Konda Kapus and Ojas (Tribals of Andhra Pradesh, Tribal Cultural Research and Training Institute). The Kapus who are found all over the State are principally agriculturists.

Plain Kapu community is predominantly found in East and West Godavari Districts, and they are also spread all over Coastal Andhra. According to terminology, the plain Kapus differ from the other two tribal communities (Konda Kapu, Konda Dora) as there is regional disparity in calling Plain Kapus with different names. In Srikakulam and Visakhapatnam Districts Plain Kapus are also called as Talaga and even among them the economically well to do families are called as 'Doras'.

The Talagas Mr. H.A. Stuart writes "are a Telugu caste of cultivators, who were formerly soldiers



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in the armies, of the Hindu Sovereigns of Telangana. This may perhaps account for the name, for it is easy to see that the Telugu soldiers might come to be regarded as the Telugus or Telagas par excellence. The Subdivisions returned under this name show that there has been some confusion between the Telagas proper and persons who are members of other Telugu castes. The Telagas are Vaishnavites and have Brahmins as their priests. Their customs closely resemble those of other caste groups. According to him, Vantaries and Telagas are same, as their 'intiperulu' or septs are same. The inter-marriage relationship is also in existence. The term Kapu and 'Nayudu' is prevalent in East and West Godavari Districts. In Krishna District also, the term Telaga existed in upland areas and they are called as 'Kapus' in delta areas. The names 'Vantarlu', Balijakapu, Gajubalija and Peddakapu are in vogue in 'Konaseema' area of East Godavari district. From the above discussion, it is noted that the economic status plays a vital role in formation of different terminologies. It is evident that the marriage alliances are existing among them irrespective of their district or terminology.

In the social stratification, the Plainkapus, claim that they belong to the upper strata.

The social hierarchy among these three communities is as follows:

- (1) Plain Kapu
- (2) Konda Kapu
- (3) Konda Dora

ORIGIN:

The origin of Konda Kapus and Plain Kapus is vague due to lack of reliable sources of information. Even the people of these two communities are not aware of their origin. Whereas the Konda Doras have their own 'Mythology' which depicts their origin. It is learnt, from their mythology, that in the beginning, the 'Trinity' or Trimurthulu (Brahma, Vishnu, Maheswara) have killed Kamadhenuvu, by cutting it into pieces with the cooperation of other Gods and Goddesses and began to cook its flesh in Devalokam. While cooking its flesh, some pieces flung on the earth which were eaten by certain people on the earth without any flinch. Then Lord Vishnu titled those people as 'Konda Doras'. From that time onwards, they have been called as 'Konda Doras'.

According to Thurston, (1909) Konda Kapu, Konda Dora and Kapu belong to the same group. According to Rev. J. Cain (Ind. Ant. VIII-1879) Konda Kapus, were mentioned as a Sub-division of Kapus.

The above said 3 groups (Konda Kapu, Konda Dora and Kapu) were isolated through habitation in different regions for a long time and by rules of endogamy within their own community. Thus they are forming "Mendelian-Populations" by constituting separate 'gene pools'. As the populations are separated, so that inter breeding between them is very slight, or non-existent, each is tending to adapt to its local environment in different ways. These groups may also be different in some genetical and physical dimensions. The more inbreeding there is, the lesser the flow of genes in between the populations and less the chance of genetical divergence. Slight genetic differences also occur through local adaptation due to 'Natural Selection' and "Genetic Drift" due to small population sizes.

Isolation may be sociological or physical with the inter position of a barrier like mere distance between the two populations. The change in gene frequencies also causes variations in isolated groups. From genetic point of view, these changes are affected by mutation, selection, random fluctuations and migration etc. The most important fact that influences the stability of gene frequency is 'selection' due to exposure to different types of environments. The cultural aspects

vary due to stage of development in society. But the genetical characters cannot be varied. They are inherited through generations without diversity. Previously, the tribals were isolated from other groups, due to their habitation in forests, but to-day due to developmental activities, roads were laid into interior forest areas, bringing the outsiders in contact with the tribal people. These migratory trends bring new "gene flow" from one community to the other community. In spite of this assumed gene flow, each tribal community has got their own culture and marriage associations by rules of strict endogamy. So this slight 'gene flow' cannot change entirely their original genetic characters inherited through generations. So basing on genetical frequencies we can identify the relative closeness between the various populations.

Konda Doras and Konda Kapus who are Scheduled Tribes, are receiving constitutional safeguards in socio-economic and educational fields. Taking advantage of the constitutional provisions extended to tribals, Plains Kapus are trying to avail these facilities by posing themselves as Konda Kapus. Thus they are depriving the tribals of their legitimate constitutional rights.

Though 'Thurston' and others stated that the Konda Kapu and Konda Dora are a variant or subset of Kapus, no systematic study has been so far made on this aspect. The main purpose of taking this study is to find out the genetic relationship between Konda Kapu, Konda Dora and Plain Kapu. The study also covers the genetic distances, homogeneity and heterogeneity and the origin of these 3 communities. If Konda Kapu, Konda Dora and Plain Kapu belong to a homogenous group, they must be similar in some genetical aspects. For example blood groups, P.T.C. etc. If they do not belong to the same stock, there will be diversity in genetical aspects. So by depending upon genetic parameters we can find out, if there is any biological relationship between these communities.

If these 3 communities diverged from a common ancestral stock, inspite of their present diversity, they may have relatively more homogeneity among themselves. Hence, the importance of taking this study.

HYPOTHESIS:

The Konda Dora, Konda Kapu and Plain Kapu belonged to a common ancestral stock.

OBJECTIVES:

The objectives of the study are as follows:

1. To assess the genetic relationship between Konda Kapu, Konda Dora and Plain Kapu.
2. To find out whether Konda Dora, Konda Kapu and Plain Kapu belong to the same stock.
3. To estimate the homogeneity and heterogeneity of these communities.
4. To compare genetic distance between these 3 communities.

SAMPLE SELECTION:

To study the above said genetic markers, Raja Vommangi and Rampachodavaram T.D. Blocks in East Godavari District were selected because of the high concentration of Konda Doras and Konda Kapus in these Blocks. A random sample of 100 individuals of each community were selected taking due care to eliminate closely related individuals. The Plain Kapu community was covered in the Amalapuram Taluk of East Godavari.

METHODOLOGY:

1) P.T.C. 13 THRESH HOLDS:

1300 m.g. salt was dissolved in 1 litre of distilled water and serial dilutions were prepared as described by Harris and Kalmus.



2) ABO BLOOD GROUPS:

Blood samples were collected from finger pricks in sterile tubes with 3% citrated saline and preserved in a thermos flask with ice. The samples were washed twice and a 2% cell suspension was prepared. The grouping of samples were done by adding equal quantities of cell suspension and anti A and anti B sera which was purchased, from Dacruz Corporation, Bombay.

3.

- a) Hand clasping : By observation R/L
 b) Handedness : By observation R/L
 c) Arm folding : By observation R/L
 d) Occipital hair whorls :

Single

Clockwise

Anti Clock-
wise

Double and multiple whorls were observed.

4.

- a) Earlobe Variation:

Separate

Attached

Small

Big

- b) Dawkins tubercle : By observation + / -

- 5) Stomatoscopic observations : By observation following Martin's method.

A REVIEW OF THE SOCIOLOGICAL LIFE OF THE THREE COMMUNITIES REVEALS THE FOLLOWING SIMILARITIES AND DISSIMILARITIES AMONG THESE THREE COMMUNITIES

I) SIMILARITIES BETWEEN KONDA KAPU AND KONDA DORA AND PLAINS KAPU

- 1) All the 3 communities are patrilineal, patriarchal, patrilocal and the inheritance is through the male line.
- 2) Mode of disposal of dead is by cremation.
- 3) Agriculture is the main occupation for all these three communities.

II) DISSIMILARITIES:

The Konda Dora differs from Konda Kapu and Plain Kapu in the following matters:

- 1) Absence of levirate system among the Konda Kapu and Plain Kapu while it is still prevalent among Konda Dora.
- 2) Employment of a Brahmin Priest for performing socio-religious and ritualistic ceremonies like marriages etc., by the Konda Kapu and Plain Kapu, while the Konda Dora do not employ any Brahmin Priest.

3) Konda Kapu and Plain Kapu do not permit inter-marriages with Konda Dora but Konda Kapu girls are married to Plain Kapus.

4) Konda Kapu and Plain Kapu do not accept cooked food from Konda Dora but the Konda Dora accept food from both the communities.

5) Prohibition of Beef eating in contrast to preferential beef eating among Konda Dora.

6) Existence of mythological significance to Beef eating.

7) The Caste heirarchy is as follows:

1) Plain Kapu

2) Konda Kapu

3) Konda Dora

III) KONDA KAPU AND KONDA DORA DIFFER WITH PLAIN KAPU
as follows:

1) The Konda Kapu and Plains Kapu pay bride price in contrast to payment of dowry by the Plain Kapu in contracting marriages.

2) Marriage by such primitive customs as elopement, capture, sister exchange and service are very much prevalent among the Konda Kapu and Konda Dora in contrast to marriage by mutual consent and negotiation among the Plain Kapu.

3) Divorce and widow remarriage are permitted by the Konda Kapu and Konda Dora while they are not permitted by Plain Kapu.

4) The existence of caste council among the Konda Kapu and Plain Kapu in which all intra tribal disputes are settled while the Plain Kapus decide the disputes usually in a court of law.

5) The Konda Dora and Konda Kapu practice podu cultivation, while the Plains Kapu are settled agriculturists.

It is apparent from the above discussion, that the 3 communities are differing from each other in certain social characters. This may be attributed, due to their habitation in different regions which will have great impact on the culture, and social structure. Certain similarities in between Konda Kapu and Konda Dora in social aspects may be attributed to their habitation in the forest and tribal customs.

R E S U L T S

SOMATOSCOPIC FEATURES:

The frequency of somatoscopic characters like Hair form, texture, quantity, color, body hair, occipital hair whorls, eyes, shape of fore head, chin, lips, nose and earlobe variation were collected for a comparative study of the characters between the 3 communities.

1) HAIR FORM:

I (a) FREQUENCY OF HAIR FORM

Classification	Konda Kapu	Konda Lora	Plain Kapu
Straight	9.00	10.00	31.00
Low Waves	55.00	42.00	51.00
Deep Waves	24.00	20.00	12.00
Curly	12.00	13.00	6.00
Frizzly	--	15.00	--

The three communities are predominantly having wavy type of hair with low waves representing more than 50% of the sample among Konda Kapu and Plain Kapu. Next higher frequency is observed with deep waves among

Konda Kapu and Konda Dora but among Plain Kapu a large percentage of (31%) straight hair was observed. Frizzly hair was observed only among Konda Dora.

I (b) HAIR TEXTURE:

I (b) FREQUENCY OF HAIR TEXTURE

Classification	Konda Kapu	Konda Dora	Plain Kapu
Coarse	65.00	81.00	3.00
Medium	30.00	7.00	92.00
Fine	5.00	9.00	5.00

Regarding Hair texture, the Konda Kapu and Konda Dora have predominantly coarse hair, while the Plain Kapus have medium hair. Perhaps the regular habit of oiling among the Plain Kapus was responsible for the difference. Otherwise the character might not show much difference between the 3 communities.

I (c) HAIR QUANTITY:

I (c) FREQUENCY OF HAIR QUANTITY

Classification	Konda Kapu	Konda Dora	Plain Kapu
Thin	6.00	3.00	20.00
Medium	63.00	92.00	65.00
Thick	28.00	5.00	15.00



All the three communities are predominantly having medium quantity of hair, with the Konda Dora having 92% of medium hair and Konda Kapu and Plains having 66% and 65% of medium hair respectively. The frequency of thin and thick types are comparatively less. In this character the Plain Kapus and Konda Kapus are closer to each other than either of them to Konda Doras.

I. (d) HAIR COLOUR:

I (d) FREQUENCY OF HAIR COLOUR

Classification	Konda Kapu	Konda Dora	Plain Kapu
Black	83.00	89.00	95.00
Dark Brown	4.00	1.00	--
Gray	13.00	10.00	5.00

All the three communities have black hair with few exceptions. The frequency of black hair ranges from 83% among Konda Kapus to 95% among Plain Kapus. The other colours are insignificant.

I (e) HAIR ON BODY CHEST, ARMS AND LEGS :

I (e) FREQUENCY OF HAIR ON CHEST

Classification	Konda Kapu	Konda Dora	Plain Kapu
Slight	(80.39)	(74.41)	(8.42)
Medium	(19.60)	(25.87)	(66.31)
Thick	--	--	(25.26)

I (f) FREQUENCY OF HAIR ON ARMS

Classification	Konda Kapu	Konda Lora	Plain Kapu
Slight	82.35	65.11	8.42
Medium	15.68	27.90	70.52
Thick	1.96	6.97	21.05

I (g) FREQUENCY OF HAIR ON LEGS

Classification	Konda Kapu	Konda Dora	Plain Kapu
Slight	70.00	47.00	12.00
Medium	15.68	30.23	65.26
Thick	5.88	6.97	25.26

In the distribution of Hair on body, chest, arms and legs, Plain Kapus significantly differ from both Konda Kapu and Konda Dora. Whereas the Konda Kapu and Konda Dora have slight distribution of body hair on the 3 regions, the Plain Kapu have a medium distribution of hair. Perhaps the different environments of Plains living and forest living is responsible for this slight deviation. The character is more primitive among Konda Kapu and Konda Dora.

I (h) OCCIPITAL HAIR WHORLS:I (h) FREQUENCY OF OCCIPITAL WHORLS

Classification	Konda Kapu	Konda Lora	Plain Kapu
Single	88.00	96.00	94.00
Double	12.00	4.00	6.00
Clockwise	93.00	87.00	96.00
Anti-Clockwise	7.00	13.00	4.00
Fore Lock	--	1.00	--

Single Clockwise type of hair whorls are dominant in all the 3 communities. The variation among the 3 communities does not show any significant differences.

2 (a) EYES:EYE COLOUR2 (a) FREQUENCY OF EYE COLOUR

Classification	Konda Kapu	Konda Lora	Plain Kapus
Black	--	2.00	4.00
Light Brown	6.00	13.00	18.00
Dark Brown	83.00	74.00	75.00
Brown	2.00	5.00	--
Gray	9.00	6.00	3.00

In respect of eye Colour all the 3 communities have predominantly dark brown eyes ranging from 74% to 83%. However the Plain Kapus have got 18% light Brown eyes in contrast to 6% among the Konda Kapu and 13% of Konda Lora.

2 (b) EYE LID:2 (b) FREQUENCY OF EYE-LID

Classification	Konda Kapu	Konda Dora	Plain Kapu
Fissure	5.00	14.00	5.00
Straight	95.00	84.00	95.00
Oblique	--	2.00	--

In all the three communities, the eye lids are predominantly straight and only a small percentage (2%) of oblique eyes are observed among the Konda Doras. This may suggest a slight admixture of Mangolian elements among the Konda Dora.

II (c) FREQUENCY OF EYE BROWS

Classification	Konda Kapu	Konda Dora	Plain Kapus
Thin	21.00	34.00	13.00
Medium	74.00	58.00	70.00
Thick	5.00	8.00	17.00
Connected	20.00	19.00	57.00
Unconnected	80.00	81.00	43.00
a) Slight	20.00	19.00	30.00
b) Marked	--	--	17.00



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The eye brows are predominantly medium in all the 3 communities. But the Konda Kapu and Plains Kapu are more **closer** to each other than either of them to the Konda Dora, who exhibited a higher percentage of thin eye brows than the Konda Kapu and Plain Kapu.

In the matter of connected eye brows, the Plain Kapu differs significantly from both the Konda Kapu and Konda Dora having 57% of connected eye brows, while the Konda Kapu and Konda Dora have 80% and 81% unconnected eye brows respectively.

II(d) IRIS:

OF
II (d) FREQUENCY/DIFFERENT TYPES OF IRIS

Classification	Konda Kapu	Konda Dora	Plain Kapu
Homogeneous	69.00	80.00	91.00
Speckled	31.00	18.00	9.00
Rayed	--	2.00	--

The iris is homogeneous in a majority of Plain Kapus. But among the Konda Kapu and Konda Dora about 31% and 18% respectively, have speckled Iris probably due to Vitamin 'A' deficiency.

II (e) SCLERA:II (e) FREQUENCY OF DIFFERENT TYPES OF SCLERA

Classification	Konda Kapu	Konda Dora	Plain Kapu
Clear	35.00	56.00	83.00
Speckled	53.00	38.00	3.00
Dull	12.00	6.00	14.00

The sclera also shows the same tendency as that of Iris, where a majority of plain Kapus, show clear sclera, while the Konda Kapu and Konda Dora exhibit speckled and dull sclera.

III. FOREHEAD:III (a) FREQUENCY OF DIFFERENT TYPES OF FOREHEAD

Classification	Konda Kapu	Konda Dora	Plains Kapu
Marked slope	26.00	26.00	6.00
Medium	42.00	75.00	82.00
Straight	32.00	12.00	12.00

The forehead exhibits medium slope in a majority of Konda Dora on the plains, while Konda Kapu exhibits medium and straight foreheads. Marked slope is observed among the Konda kapu and Konda Dora.

III (b) FOREHEAD HEIGHTIII (b) FREQUENCY OF FOREHEAD HEIGHT

Classification	Konda Kapu	Konda Dora	Plains Kapu
Low	19.00	30.00	21.00
Medium	81.00	70.00	79.00

III (c) FOREHEAD BREADTHIII (c) FREQUENCY OF DIFFERENT TYPES OF FOREHEAD BREADTH

Classification	Konda Kapu	Konda Dora	Plain Kapu
Narrow	13.00	20.00	15.00
Medium	70.00	65.00	55.00
Broad	17.00	15.00	30.00

The forehead exhibits medium height and medium breadth in all these communities showing no marked differences.

IV (a) CHINIV (a) FREQUENCY OF VARIOUS TYPES OF CHIN

Classification	Konda Kapu	Konda Dora	Plain Kapu
Prominent	13.00	2.00	5.00
Medium	78.00	79.00	85.00
Receding	9.00	5.00	10.00

IV (b) CHIN SHAPEIV (b) FREQUENCY OF CHIN SHAPE

Classification	Konda Kapu	Konda Lora	Plain Kapu
Oval	25.00	17.00	20.00
Round	37.00	33.00	23.00
Square	22.00	27.00	35.00
Pointed	16.00	23.00	22.00

The Chin is predominantly medium in all the 3 communities. In respect of Chin shape, round square, Oval and pointed shapes are observed in all the 3 communities. However, among the Konda Kapu and Konda Lora a slight majority of people have round chin while Plain Kapu have square chins.

V (a) LIPS:V (a) FREQUENCY OF VARIOUS TYPES OF LIPS

Classification	Konda Kapu	Konda Lora	Plain Kapu
Thin	23.00	7.00	2.00
Thick	10.00	26.00	12.00
Medium	67.00	77.00	86.00

The lips are of medium thickness in all the 3 communities, but the Plain Kapus have^a relatively higher percentage of medium lips, while Konda Kapu have thin lips and Konda Dora thick lips. Thus the Konda Dora exhibits more primitiveness in the lip shape.

V (b) LIP-EVERSION:

V (b) FREQUENCY OF DIFFERENT TYPES OF LIP-EVERSION

Classification	Konda Kapu	Konda Dora	Plain Kapu
Slight	48.00	14.00	75.00
Medium	40.00	74.00	23.00
Marked	12.00	12.00	2.00

The Plain Kapu differ from both the Konda Kapu and Konda Dora in having predominantly slightly-everted lips while Konda Dora have predominantly medium everted lips and the Konda Kapu have slight and medium everted lips in the frequency of 48% and 40% respectively. Marked eversion is comparatively less in the 3 communities.

VI. SUPRA ORBITAL RIDGES:

VI. FREQUENCY OF SUPRA ORBITAL RIDGES

Classification	Konda Kapu	Konda Dora	Plain Kapu
Imperceptible	10.00	7.00	10.00
Trace	89.00	86.00	89.00
Moderate	1.00	6.00	1.00
Pronounced	--	1.00	--

The Supra orbital ridges are not marked in any one of the 3 communities. A majority of all these 3 communities with slight variation ranging from 86% to 89% have only trace of supra orbital ridges.

VII. NOSE :

VII. FREQUENCY OF NASION DEPRESSION

Classification	Konda Kapu	Konda Dora	Plain Kapu
Shallow	48.00	30.00	10.00
Medium	41.00	55.00	82.00
Deep	12.00	15.00	8.00

The Nasion depression is predominantly medium 82% among the Plains Kapu, 55% among Konda Dora and 41% among Konda Kapu. In contrast to a relatively lower percentage of shallow nasion depression among the Plain Kapu, the Konda Kapu (48%) and Konda Dora (30%) have shallow type.

VII (b). NASAL BRIDGE:

VII(b) FREQUENCY OF NASAL BRIDGE

Classification	Konda Kapu	Konda Dora	Plains Kapu
Straight	52.00	35.00	56.00
Concave	18.00	14.00	14.00
Convex	13.00	22.00	20.00
Concavo-Convex	17.00	29.00	10.00

The Nasal Bridge is straight in more than 50% of Konda Kapu and Plains Kapu, whereas the Konda Dora has 35%.

The concave nose among Konda Kapu, Concavo-Convex nose among Konda Dora and Convex nose among Plains Kapus are more frequent.

VII (c). NASAL SEPTUM:

VII (C). FREQUENCY OF NASAL SEPTUM

Classification	Konda Kapu	Konda Dora	Plain Kapu
Horizontal	23.00	13.00	10.00
Upwards	42.00	53.00	11.00
Downwards	35.00	34.00	79.00

The Nasal Septum is pointed downwards in a majority of the Plains Kapu in contrast to upward pointing among Konda Dora and Konda Kapu.

VIII. EAR LOBE:

VIII. FREQUENCY OF VARIOUS TYPES OF EAR LOBE

Classification	Konda Kapu	Konda Dora	Plain Kapu
Separate	39.00	46.00	51.00
Attached	61.00	54.00	49.00
Small	26.00	30.00	32.00
Large	13.00	16.00	19.00

Separate and attached ear lobes occur equally among the plain kapu, While attached ear lobes are more among the Konda Kapu and Konda Dora.

The physical features discussed above among the 3 communities does not exhibit any appreciable difference except Hair Texture, Hair on Body (Chest, Arms, Legs) Ear lobe and Lips eversion, which are more due to the exposure of different communities to different environments, rather than any genetic causes.

GENETIC CHARACTERSIX. P.T.C. TASTE SENSITIVITY:IX FREQUENCY OF TASTERS AND NON-TASTERS

Classification	Konda Kapu	Konda Dora	Plain & Kapu
Tasters	36.00	39.00	41.00
Non-Tasters	64.00	61.00	59.00

IX (b) GENE FREQUENCY OF P.T.C.

Classification	Konda Kapu	Konda Dora	Plain Kapu
'T' Gene	0.2000	0.2190	0.2319
't' Gene	0.8000	0.7810	0.7681

The method of serial dilutions with a sorting technique developed by Harris and Kalmus has been followed. A stock solution containing 13% of phenylthiourea, was made with distilled water by serial

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dilution.

The Chi² - test was calculated by using G- tables of Wolf (1957).

The frequency of tasters and non-tasters among the 3 communities are presented in the above table.

The 3 communities show a high frequency of non-tasters among themselves. The percentage differences between the 3 communities are not significant when subjected to Chi² - test.

K.D.X K.K.	.1921	1 d.f.	.70 > P > .50
K.D.X.P.K.	.0833	1 d.f.	.80 > P > .70
K.K.X.P.K.	.5282	1 d.f.	.50 > P > .30

The heterogeneity Chi² - between 3 communities is also not significant, (.5353 2 d.f. .80 P .70) revealing that these 3 communities are homogeneous with reference to P.T.C. taste sensitivity. The gene frequency distribution shows that 't' Gene ranges between 0.8000 to 0.7681. The highest frequency is observed among the Konda Kapu and lowest among Plains Kapu. It seems that Plains living increases the dominant taster (T) gene.

X. HAND CLASPING:

X(a) FREQUENCY OF 'L' TYPE OF HAND CLASPING

Community	Sex.	Frequency	Chi ²	Probability
Konda Dora	M	53.48		
	F	52.63	.1871	.70 > P > .50
	T	53.00		



(29)

Konda Kapu	M	58.82			
	F	71.42	1.7004	.20	$P > .10$
	T	65.00			
Plain Kapu	M	62.10			
	F	80.00	3.5243	.10	$P > .05$
	T	63.00			

The frequencies of 'L' Type of hand clasping is more predominant in all the 3 communities in both the sexes. When the data between the males and females of the same community are subjected to Chi² - test, no significant differences were observed between the sexes revealing that they do not exhibit any sexual variation.

In the total sample for all the 3 communities, the females exhibit a higher percentage of 'L' type of hand clasping than the males. However among the Konda Dora such differences are very slight and the males and females show an almost equal frequency.

Chi² - for 'L' Type of Hand Clasping:

Heterogeneity Chi² - for all Communities.

(Males & Females) 3.0127 2 d.f. .30 $P > .20$

The homogeneity Chi² calculated to find out the inter group variability separately for males and females by taking caste groups in pairs does not show any

dilution.

The Chi² - test was calculated by using G- tables of Wolf (1957).

The frequency of tasters and non-tasters among the 3 communities are presented in the above table.

The 3 communities show a high frequency of non-tasters among themselves. The percentage differences between the 3 communities are not significant when subjected to Chi² - test.

K.D.X K.K.	.1921	1.d.f.	.70 > P > .50.
K.D.A.P.K.	.0833	1 d.f.	.80 > P > .70.
K.K.X.P.K.	.5282	1 d.f.	.50 > P > .30.

The heterogeneity Chi² - between 3 communities is also not significant, (.5353 2 d.f. .80 P .70) revealing that these 3 communities are homogeneous with reference to P.T.C. taste sensitivity. The gene frequency distribution shows that 't' Gene ranges between 0.8000 to 0.7681. The highest frequency is observed among the Konda Kapu and lowest among Plains Kapu. It seems that Plains living increases the dominant taster (T) gene.

X. HAND CLASPING:

X(a) FREQUENCY OF 'L' TYPE OF HAND CLASPING

Community	Sex.	Frequency	X ²	Probability
Konda Dora	M	53.48		
	F	52.63	.1871	.70 > P > .50
	T	53.00		



(29)

Konda Kapu	M	58.82		
	F	71.42	1.7004	$.20 > P > .10$
	T	65.00		
Plain Kapu	M	62.10		
	F	80.00	3.5243	$.10 > P > .05$
	T	63.00		

The frequencies of 'L' Type of hand clasping is more predominant in all the 3 communities in both the sexes. When the data between the males and females of the same community are subjected to Chi² - test, no significant differences were observed between the sexes revealing that they do not exhibit any sexual variation.

In the total sample for all the 3 communities, the females exhibit a higher percentage of 'L' type of hand clasping than the males. However among the Konda Dora such differences are very slight and the males and females show an almost equal frequency.

Chi² - for 'L' Type of Hand Clasping:

Heterogeneity Chi² - for all Communities.
(Males & Females)

3.0127 2 d.f. $.30 > P > .20$

The homogeneity Chi² calculated to find out the inter group variability separately for males and females by taking caste groups in pairs does not show any

significant difference for males as well as females between the 3 communities, thereby revealing that these 3 communities are homogeneous in respect of hand clasping trait. However the Konda Kapu and Plain Kapu are more nearer to each other than either of them to Konda Dora.

XI. ARM FOLDING:

XI.(a) FREQUENCY OF 'L' TYPE OF ARM FOLDING

Community	Sex	Frequency	χ^2	1 d.f.	Probability
Konda Dora	M	53.48			
	F	50.87			
	T	52.00			
Konda Kapu	M	52.91			
	F	61.22			
	T	57.00			
Plain Kapu	M	52.63			
	F	60.00			
	T	53.00			

0.0072

.95 > P > .90

0.7007

.50 > P > .30

0.1044

.80 > P > .70

As was observed in case of hand clasping, the frequency of 'L' type of Arm folding is more predominant in both the sexes, in the total sample as well as among the individual communities.

(30 a)

OBTAINED VALUES OF χ^2 TEST FOR ARM FOLDING
2 d.f.

	Konda Kapu	Konda Dora
Plains Kapu	.5337	.0801
Konda Kapu	--	.7251

OBTAINED VALUES OF χ^2 TEST FOR HAND CLASPING
2 d.f.

	Konda Kapu	Konda Dora
Plains Kapu	.1767	1.4736
Konda Kapu	--	5.4684

Chi² - FOR 'L' TYPE OF ARM FOLDING:

Heterogeneity in all communities.

Males : 0.0088 2 d.f. .95 > p > .90

Females : 1.1835 2 d.f. .30 > p > .20

Chi² for the 3 communities.

(Males X Females) = 0.7519 2 d.f. .50 > p > .30

The Konda Kapu and Plain Kapu females show a higher frequency of 'L' type than their male counterparts. While among the Konda Dora the reverse is observed. However, the Chi² - test between the males and females of each community, as well as all the communities does not show any significant differences. The homogeneity Chi² - for inter group variability does not show any significant differences among the males or females between these 3 communities at 5% level of probability, thereby revealing that these 3 communities are homogeneous in respect of Arm folding also.

XII. ABO BLOOD GROUPS:XII (a) ABO BLOOD GROUP FREQUENCIES (PERCENTAGE)

Tribes	N	A	B	AB	O
Konda Kapu	100	21.00	32.00	7.00	40.00
Konda Dora	100	32.00	25.00	12.00	31.00
Plains Kapu	100	18.00	31.00	7.00	44.00

The 3 communities exhibit different types of ABC frequencies. The frequency of 'O' group was highest among the Plains Kapu, while the Konda Dora exhibit a higher frequency of 'A' group almost equal to that of 'O' group. The ABO gene frequencies for 3 communities were presented below:

XII (B). ABO GENE FREQUENCIES:

Tribes	p	q	r	χ^2 2 d.f.
Konda Kapu	0.1513	0.2187	0.6300	0.0350
Konda Dora	0.2404	0.1944	0.5652	0.5756
Plains Kapu	0.1253	0.2017	0.6700	0.5368

It is evident from the gene frequency and from χ^2 test that all the 3 communities are at equilibrium level with respect to the distribution of ABO gene frequencies. The Konda Dora differs from both the Konda Kapu and Plains Kapu in having a higher frequency of 'p' gene over 'q'. While among, the Konda Kapu and Konda Dora the frequency of 'q' is much higher than 'p' gene.

FOR BLOOD GROUPS: χ^2 TEST

Between the 3 communities:

Konda Dora X Konda Kapu	- 5.6370	3 d.f.	.20 > P > .10
Konda Kapu X Plains Kapu	- 0.4374	3 d.f.	.95 > P > .90
Konda Dora X Plains Kapu	- 3.2132	3 d.f.	.50 > P > .30
3 communities	- 9.6383	6 d.f.	.20 > P > .10

For assessing inter group variability these 3 communities are taken in pairs and χ^2 were calculated. The test reveals that none of these 3 communities differ significantly from others at 5% level of probability. However the homogeneity is much higher between the Konda Kapu and Plains Kapu.

XIII. Rh. Blood Group:

XIII (a) FREQUENCY OF Rh. BLOOD GROUPS

Classification	Konda Kapu	Konda Dora	Plains Kapu
Rh (+) Ve	92.00	95.00	96.00
Rh (-) Ve	8.00	5.00	4.00

Only Anti D sera was utilised and subjects were classified as Rh (+) ve or Rh (-) ve.

The frequency of Rh (+ Ve) individuals is much higher in all the communities. The highest frequency is observed among the Plains Kapu (96%) followed by Konda Dora (95%), Konda Kapu are having relatively lower frequency (92%).

XIII (b) Rh. Gene Frequency:

	D.	d.
Plains Kapu	.8000	.2000
Konda Dora	.7764	.2236
Konda Kapu	.7172	.2828

The frequency of 'd' gene ranges between .2000 (Plain Kapus) to .2828 (Konda Kapus).

Chi² for Rh. Blood:

Konda Dora	X Konda Kapu	0.7468	1 d.f.	.50 > P > .30
Konda Kapu	X Plain Kapu	1.4444	,,	.30 > P > .20
Konda Dora	X Plains Kapu	0.1168	,,	.80 > P > .70
Between the 3 communities		1.5718	2 d.f.	.50 > P > .30

In this trait, the Konda Dora and Plain Kapus are relatively closer to each other than either of them to the Konda Kapu. However, when these 3 communities are taken in pairs and subjected to Chi² - test none of them differ with other communities significantly at 5% level of probability showing that the 3 communities are homogeneous with respect to this gene.

The heterogeneity Chi² for all the 3 communities (1.5718 2 d.f.) is also not significant, revealing that the 3 populations are in equilibrium.

XIV. ABH SECRETION:

XIV (a) FREQUENCY OF SECRETORS AND NON-SECRETORS

Classification	Secretors	Non-Secretors
Konda Kapu	88.00	12.00
Konda Dora	75.00	25.00
Plains Kapu	80.00	20.00

XIV (b) FREQUENCY OF SECRETOR GENE:

Classification	Se.	Se.
Konda Kapu	0.6536	0.3464
Konda Dora	0.5000	0.5000
Plains Kapu	0.5529	0.4471

The percentage of non-secretors is high among the Konda Dora (25%) and Plain Kapus (20%), while it is relatively low (12%) among the Konda Kapu.

²
Chi test for Secretor Frequency:

Konda Dora X Konda Kapu	5.7045	1 d.f.	$.05 > P > .02$
Konda Kapu X Plains Kapu	2.4026	1 d.f.	$.20 > P > .10$
Konda Dora X Plains Kapu	0.7181	1 d.f.	$.50 > P > .30$
Between the 3 communities	5.8015	2 d.f.	$.10 = P = .05$

The frequency of Secretors and Non-secretors among the 3 communities are subjected to goodness of fit ratio by calculating χ^2 - taking each community in pair with other two communities. The Plains Kapu did not exhibit any significant differences with Konda Kapu or Konda Dora. The Konda Kapu however significantly differs with the Konda Dora. The heterogeneity χ^2 for the 3 communities does not show any significant difference.

XV. COLOUR BLINDNESS:XV. FREQUENCY OF COLOUR BLINDNESS

	Konda Kapu	Konda Dora	Plains Kapu
Colour Blindness	5.00	4.00	9.00

The rate of colour blindness is much higher among the Plains Kapu (9%) while the Konda Kapu exhibits (5%) and Konda Dora 4% respectively. The differences are in agreement with the findings of previous studies that the incidence of colour blindness in tribals living the forest areas is relatively low due to natural selection.

XVI. GENETIC DIFFERENCES BETWEEN KONDA KAPU, K ONDA DORA AND PLAINS KAPUXVI - χ^2 - VALUES FOR THE INTER GROUP DIFFERENCES WITH RESPECT TO SOME GENETIC CHARACTERS AND THE TOTAL GENETIC DIFFERENCE 'G²' OBSERVED FOR THE DIFFERENT GROUP COMBINATIONS

Group Combination.	χ^2 Inter Groups X		χ^2 Values for the Genetic Character		
	ABO	Rh	Se	PTC	Genetic Difference 'G ² '
PK X KK	0.4374	1.444	2.4026	.5282	0.0398
PK X KD	3.2182	0.1168	0.7131	.0833	0.0256
KK X KD	5.6370	0.7468	5.7045	.1921	0.0577

The χ^2 - values for inter group differences with respect to ABO blood groups, Rh. factor, Secretor, PTC taste

sensitivity and the total genetic difference G^2 - between the 3 group combination are presented above.

It is observed from the table that except for Secretor Gene, between Konda Kapu and Konda Dora, the other characters do not exhibit any significant differences between any two of these 3 communities. The total genetic difference also ranges from 0.0256 to 0.0577. In this respect both the Konda Dora and Konda Kapu are more akin to the Plains Kapu than they are to each other. This lends support to the view that these 3 communities originated from a common stock. However while the Konda Dora exhibit ABO gene frequencies, similar to that of the Australoid populations, the Konda Kapu and Plain Kapu exhibit gene frequencies akin to the mixed population in which 'q' gene is more than 'p' gene.

COMPARISON

ABO BLOOD GROUPS:

The ABO, Blood Group frequency distribution of some tribal communities and caste groups of Andhra Pradesh and adjoining States are presented in Table No. XVII.

Konda Kapu exhibit more proximity to the Malers and Plain Kapu and Backward Classes of Andhra Pradesh. The Distribution also shows much similarity with the pooled data for Andhra Pradesh. The Konda Kapu and Plain Kapu exhibit a higher value of 'q' gene over 'p' gene like Indians other than Australoids and the caste groups, backward classes and Scheduled Castes of Andhra Pradesh, while the Scheduled Tribes and other Australoid populations of India exhibit a higher 'p' gene than 'q' gene.

The Konda Dora exhibits a higher value of 'p' over 'q', just like the other Australoid populations. This reveals that the Konda Kapu and Plain Kapu are different from Australoid tribal communities. Similar observation on Konda Kapus was also made by Rao (1977).

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It is observed from the table that except for Secretor Gene, between Konda Kapu and Konda Dora, the other characters do not exhibit any significant differences between any two of these 3 communities. The total genetic difference also ranges from 0.0256 to 0.0577. In this respect both the Konda Dora and Konda Kapu are more akin to the Plains Kapu than they are to each other. This lends support to the view that these 3 communities originated from a common stock. However while the Konda Dora exhibit ABO gene frequencies, similar to that of the Australoid populations, the Konda Kapu and Plain Kapu exhibit gene frequencies akin to the mixed population in which 'q' gene is more than 'p' gene.

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The Konda Dora exhibits a higher value of 'p' over 'q', just like the other Australoid populations. This reveals that the Konda Kapu and Plain Kapu are different from Australoid tribal communities. Similar observation on Konda Kapus was also made by Rao (1977).

Judging from both the male and female populations it is observed that the Plain Kapu and Konda Kapu are more nearer to each other than either of them to the Konda Dora.

FREQUENCY OF ARM FOLDING:

Out of the 16 Indian populations with whom the present data is compared, the Kapus (Veerraju and Satyanarayana '72) and Chenchus (Rao '75) exhibit the highest frequency, while Konda Dora, (Rao '77) exhibited the lowest frequency. The Plain Kapus, Konda Kapus and Konda Doras of the present study does not show any significant differences between them, and are akin to the Kolams, Kayasthas in respect of this trait.

Among the 15 female populations the Kolams and Chenchus exhibit highest frequency, while the Konda Dora (Rao '77) exhibited the lowest frequency. The Plain Kapus and Konda Kapus are very close to each other and also agree with the Kapus studied by Veerraju and Satyanarayana ('72). While the Konda Dora of the present study significantly differ with both Konda Kapu and Plain Kapu.

Thus while the male population of these 3 communities does not show appreciable differences, the female population, differ from the Konda Dora.



FREQUENCY OF P.T.C.:

The frequency of tasters among the various populations is presented in Table No.XVIII.

The highest frequency of Taster gene is observed among mongoloid populations, while the caste groups exhibit an intermediate frequency. The three communities Plain Kapu, Konda Kapu, Konda Dora exhibit lowest frequencies and show close similarity with each other. The taster gene frequency ranging between 36 to 41%. The other community which is in close proximity with these group is Wada Baliya a lower caste, fishermen community of Andhra Pradesh.

CONCLUSION

THE discussion with reference to Blood Groups, ABH, Secretion and Taster gene reveal that the Konda Kapu and Plain Kapu are much closer to each other and are also closer to the Konda Dora than either of them to some other tribal communities. The Non-Australoid characteristics of Blood Group distribution, among the Konda Kapu and Plain Kapu suggest that the Konda Kapu might have migrated at a distant past from the Plains and established certain peculiarities due to their isolated life. As the Konda Dora exhibits australoid type of Blood group frequency, inspite of having closeness in certain characters with the Konda Kapu as well as Plains Kapu, their relationship with the Kapus could not be decided satisfactorily.

All the three communities are patrilineal and follow Hindu customs, inheritance is from father to son and the mode of disposal of the body is by cremation.

The Konda Kapu and Konda Dora follow such tribal customs as bride price, marriage by elopement, widow remarriage, divorce and caste punchayat and serving liquor to solemnise any agreement between two parties, the Plain Kapu does not follow these customs.

However the Konda Kapu and Plain Kapu differ from the Konda Dora in not following levirate system and engage a Brahmin priest to perform marriage and other religious functions. Both of them treat the Konda Dora as inferior to them and does not intermarry or accept cooked food from them. The Konda Doras are Beef eaters and a mythological significance is attached to it.

Judged from all these aspects it may be concluded that the Konda Kapu and Plain Kapu are different from the Konda Dora. The adoption of tribal customs by the Konda Kapu might have taken place after their migration to the forest areas and constant touch with the tribal life and culture.

TABLE NO. XVII ABO BLOOD GROUP REQUENCIES AMONG SOME INDIAN POPULATIONS.

Population.	No.	A	B	AB	O	P	Q	R	Investigator.
Bhils (Aurangabad)	44	13.68	52.27	2.27	31.81	--	--	--	Macfarlane '40 cited by Mourant '76.
Chenchus	100	37.00	18.00	8.00	37.00	.252	.133	.608	Macfarlane cited by Buchi '55
East Godavari Tribals (Pooled)	202	30.69	25.25	6.43	37.63	.2070	.1736	.6134	Rao '77.
Koya	100	38.00	28.00	8.00	26.00	.2650	.1877	.5291	"
Valmiki.	30	23.33	23.33	6.67	46.67	.1634	.1634	.6831	"
Konda Dora.	13	23.07	15.38	7.69	58.34	.1680	.1230	.7336	"
Kammara.	9	22.22	22.22	--	55.56	.1182	.1182	.7454	"
Konda Reddy.	24	33.33	25.00	4.17	37.50	.2095	.1584	.6124	"
Konda Kapu.	26	13.38	28.08	3.84	57.70	.1014	.1451	.7591	"
Lambadi	45.	--	--	--	.2898	.3221	.3881	Hargrave '63 cited by Mourant '67	
Konda Kapu.	100	21.00	32.00	7.00	40.00	.1513	.2187	.6300	Present study.
Konda Dora.	100	32.00	25.00	12.00	31.00	.2404	.1944	.5652	"
Plain Kapu.	100	18.00	31.00	7.00	44.00	.1253	.2047	.6700	"
Kanni-Kar.	151	35.10	22.52	2.65	39.74	.235	.159	.630	Bose cited by Sarkar '54
Uruli	107	24.30	25.23	4.67	45.79	.161	.1166	.677	-do-



Population	No.	A.	B.	AB	Investigator		
Paniyans.	563	13.41	7.64	21.31	.462	.080	.462. Aiyappan & Sarkar 36 & 50 (Pooled)
Malapantaram.	11	32.76	13.79	8.62	44.83	.3132	.1186 .5652 Buchi '55.
Adiyans.	38	68.40	7.9	13.2	10.5	--	-- Sarkar '54
Mullukuruma.	80	10.00	25.00	1.3	63.80	--	-- -do-
Maler	235	25.53	26.81	5.53	42.13	--	-- -do-
Bhils.	44	13.63	52.27	2.27	31.81	--	-- Macfarlane '40 cited by Mouranto '76.
Indian Australoids.	5347	--	--	--	.2060	.1747	.6193 Ghosh '69 cited by Rao '77.
Indians other than Australoids.	13458	24.94	32.16	8.21	34.67	.1825	.2280 .5895 Ghosh '69
Rajputs (HP)	98	43.87	25.51	13.26	17.34	.3585	.2334 .4080 Kamal Bagai '75.
Brahmins (H.P)	60	45.00	16.66	16.66	21.66	.3617	.1583 .4798
<u>Mundaries.</u>							
Munda	130	29.23	28.46	6.92	35.38	.219	.214 .577 Macfarlane cited by Mundar '61.
Birjia	129	17.05	61.24	10.86	10.85	.198	.519 .329 Sarkar 54

Population.

	No	A.	B.	AB.	O.	P	Q	R	Investigator.
'HO'	130	31.72	27.96	5.38	34.95	--	--	--	Macfarlane cited by Munjundar '61.
Badogadaba	200	29.50	32.00	12.25	26.00	--	--	--	S.R.Dass & P.N.Bhatta- Charjee '76.
Gadaba.	580	26.37	38.27	10.17	25.17	.217	.298	.501	Deka and Pattojoshi '75.
Non-Tribals of A.P.									
Andhra Soldiers.	93	--	--	--	--	.1637	.2168	.6195	Mathew '59 cited by Mourant. '76.
Christians.	324	--	--	--	--	.1370	.1808	.6822	Dronamraju cited '59.
Hindus.	5486	--	--	--	--	.1327	.2028	.6645	'76 by Mourant
Muslims.	270	--	--	--	--	.1184	.2529	.6287	-do-
Wada Balijs.	114	18.42	24.56	5.26	51.75	.1269	.1632	.7099	H.N.Agarwal '64.
Brahmins.	601	29.5	30.4	5.5	34.6	.195	.201	.604	Padma & Murthy '74.
Reddy.	135	18.5	30.4	3.7	47.4	.118	.189	.693	-do-
Kamma	104	18.3	32.7	4.8	44.2	.123	.210	.667	-do-
Vysya.	52	5.8	44.2	1.2	48.1	.039	.267	.694	-do-
Velma	115	23.5	24.3	4.2	47.0	.156	.161	.683	-do-
Backward Classes.	221	24.9	32.1	8.6	34.4	.184	.230	.586	-do-
Scheduled Caste	142	23.9	38.0	6.3	31.7	.167	.257	.577	-do-
A.P.Pooled.	2500	22.00	33.00	7.0	38.00	.1574	.2254	.6174	Thiyuman '67 cited by Padma & Murthy.

TABLE No. XVIII.

PERCENTAGE OF TASTERS IN VARIOUS
POPULATIONS.

S.No. 1.	Population. 2.	Number 3.	Percentage 4.	Author and Year. 5.
1.	Chinese (Malaya)	50	98.0	Hugg & Whyte '55 cited by Bhattacharjee '76.
2.	Negros(Africa)	915	93.90	Lee '34.Cited by Tripathy '69.
3.	Japaneese(Japan)	656	92.80	Tsuji '57 cited by Bhatta- charjee & Chowdhury '76.
4.	RaiNepali	23	91.30	P.N.Bhattacharjee & Di'pesh Crowdry '76.
5.	Rajputs(U.P)	45	91.11	Srivastava '59
6.	Lower Caste(U.P)	130	90.77	-do- '67.
7.	Camorta.	52	89.66	H.N.Agarwal '64.
8.	Chinese(England)	66	89.40	Barnicot '64 Cited by Sha- ttacharjee '76 and Chowdhury.
9.	Tibetan(India)	242	89.30	Sharma '67 -do- Bhattacharjee
10.	hainepali(Darjeling)	208	89.0	/ & Chowdhury '76
11.	Bramhins(H.P)	60	88.33	Kame lkant '75.
12.	Car Nicobarese (Nicobar Island)	325	88.30	Agawal '64 cited by Bhattacharjee & Chowdhury. '76
13.	Rajputs	99	87.88	Praveen Kumar Seth '62
14.	Bramhins	95	87.37	-do-
15.	Kumaonis	194	87.62	-do-
16.	Nocte	271	86.3	Kumar '55 by Bhatta- charjee & Chowdhury. '76

1.	2.	3.	4.	5.
17. Lepche		200	86.0	Bhat & Chowdhury '76.
18. Lepcha		28	85.71	.Bhattacharjee Dipesh Chowdhury '76
19. Ranatharu thakurs		209	85.17	Salil Kumar basu '67.
20. Danguria Tharu		146	84.94	Srivastava '61.
21. Malayan		237	84.00	Thambillai '56 cited by Bhattacharjee ' & Chowdhury. '76.
22. Riang		201	83.8	Kumar at al '61 cited by Bhattacharjee & Chowdhury. '76.
23. Kandayat		49	81.60	Tripathy '67.
24. Kumaonis (U.P)		194	81.40	Praveen Kumar '62
25. Nancowry.		96	81.25	Agarwal '64
26. Rajput.		45	81.11	Srivastava & Tyagi. '67
27. Lower Caste		130	80.77	-do-
28. Burmese (Andaman Island)		208	80.30	Agarwal '66 cited by Bhatta Charjee & Choudry '76
29. Muslims (U.P)		39	79.49	Srivastava '67
30. Bramhins.		69	75.37	Srivastava & Tyagi. '59
31. Kayasthas (U.P)		52	75.01	Srivastava & Tyagi. '59
32. Nagar Bramhins.		199	74.00	Sanghvi '49 cited by Tripathy '69.
33. Brahmins (U.P)		132	73.49	Srivastava & Tyagi. '59.
34. Rajaputs (U.P)		98	73.46	-do-

1.	2.	3.	4.	5.
35. Khattri.	75	74.67	Srivastava	&Tyagi '59
36. Other Castes (Orissa)	49	71.40	Tripathy	'67
37. Kayastha	114	71.05	Srivastava	'67
38. Oriyas (Orissa)	195	70.80	Tripathy	'67
39. Khattries.	30	70.00	Srivastava	'59
40. English	441	68.50	Harris & Kalmus	'36 cited by Agarwal '64.
41. Punjabi (Punjab)	322	68.02	Sharma cited by Tri- pathy	'69.
42. Brahmin. (Orissa)	56	66.10	Tripathy	'67.
43. Total Hindus	277	66.06	Srivastava	'59
44. Vaishya (U.P)	67	65.6	Srivastava	& Tyagi. '67
45. Total U.P.	344	65.02	-do-	
46. Karana (Orissa)	41	63.40	Tripathy	'67
47. Vaishya (U.P)	53	62.27	Srivastava	'59.
48. Chenchu.	132	62.12	Simmons et al cited by Mouranto	'76
49. Muslims.	67	61.20	Srivastava	'59
50. Muchi.	175	61.8	Sikha Chatterjee	'76
51. Rajbhansi	234	59.85	Das & Bhattacharjee	'63
52. Rajbhansi.	141	58.90	Das et al	'67.
53. Bhantas of Andaman.	122	55.80	Agarwal	'63
54. Plain Kapus	100	41.00	Present study.	

1.	2.	3.	4.	5.
55. Konda Dora.	100	39.00	Present study.	
56. Konda Kapu.	100	36.00	-do-	
57. Wada Balgei.	114	33.33	Agarwal '64.	

TABLE No. XIX.
FREQUENCY OF SECRETORSM IN INDIAN POPULATIONS

S.No.	Population	Number	Percentage	Author & Year.
1.	Brahmins (H.P)	60	88.33	Kamal Kant Bagai '75
2.	Nicobarese of Car Nicobar.	200	88.00	Satya Prakash Gupta & P.Dash Sharma '73.
3.	Konda Kapu.	100	88.00	Present study.
4.	Rajabhanshi	95	81.00	Das and Bhattacharjee '63.
5.	Plains Kapu.	100	80.00	Present study.
6.	Rajbhanshi	250	77.2	S.R.Das & P.W.Bhattacharjee '63.
7.	Pawar	98	76.53	R.S.Negi and Asha Das '63
8.	Bareng Parojee	212	75.94	S.R. Das and P.N.- Bhattacharjee '63.
9.	Chenchu (A.P)	48	75.00	Simmons et al 1955 cited by Mouranto '76
10.	Konda Dora	100	75.00	Present study.
11.	Rajputs.	98	73.46	Kamalkanth Bagai '75
12.	Muslims (W. Bengal)	202	73.27	Bhattacharjee '56
13.	Rajputs (U.P)	767	73.14	Das. '62 cited by Das '63
14.	Rajputs (All Classes)	767	73.14	R.S.Negi and Ashadas '63
		212	72.99	-do-
15.	Ratha	215	72.56	-do-
16.	Chauhan			

1.	2.	3.	4.	5.
17.	Rajputs of U.P.	215	72.56	S.R. Dass et al, '63.
18.	Bhadoria Baghel and other clans.	243	72.43	R.S. Negi and Ashadas '63.
19.	Muslims of U.P.	150	70.67	A.C.Srivastava '76.
20.	South Indian	200	70.50	Rao '52 cited by Mouranto '76.
21.	Pathan.	150	70.00	A.C.Srivastava '76
22.	Muslims (J. & K.)	166	69.28	Bhattacharjee '66.
23.	Badogadaba	200	67.00	S.R.Das and P.N.Bha- ttacharjee '63.
24.	Malakuruvan.	36	59.17	Buchi '59-60 cited by Mouranto '76.
25.	Kurumba.	116	52.66	-do- '59.
26.	Bareng Peroja.	212	51.95	S.R.Das at 1 '63.
27.	Kadar	166	47.36	Buchi '61 cited by Mouranto '76.
28.	Badogadaba	200	42.55	S. L.Das et al '63.
29.	Mala Aryan.	78	30.30	Roy. S '55 cited by Mouranto '76.
30.	Kannikar	167	27.82	Buchi '53 cited by Mouranto '76.
31.	Malapantaram.	116	23.44	Buchi '55 cited by Mouranto '76.



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TABLE NO. XX

FREQUENCY OF R. TYPE OF HANDCLASPING AMONG INDIAN POPULATIONS

(SALIS)

Sl. No.	Population	Number	Percentage	Author and Year.
1.	Izhavas	50	68.00	Malhotra and Bhanu '67
2.	Sundris	79	64.60	Mahapatra '70
3.	Kandayats	85	62.30	" "
4.	Bangalees	258	59.69	Chattopadaya- yay '68
5.	Muria	103	59.20	Shashi-Sri- vastava Unpublished '69 cited by Gandhi and Gulati.
6.	Bangalees	529	58.98	Mahapatra '70
7.	Garhwal Brahmins	179	58.30	Tiwari and Bhasin '69
8.	Karan	85	57.70	Mahapatra '70
9.	Oriya Brahmins	97	57.30	" "
10.	Maharashtra- Brahmins	1562	57.23	Malhotra '68 cited by Shastri and Malhotra '71.

1	2	3	4	5
11.	Kayasthas	83	56.60	Mahapatra'70
12.	Gadaba	345	55.87	Deka and Pattojoshi'75
13.	Korkus	155	54.20	Shashi Sri-vastava Unpublished '69 cited by Gandhi and Gulati
14.	Jais	264	52.30	Chattopadhyay'67
15.	Kondadora	16	50.00	Rao'77
16.	Kondadora	43	46.52	Present Study.
17.	Rajputs	159	46.50	Tiwari and Bhasin'69
18.	Savara	72	44.44	Rao'77
19.	Samantha	14	42.85	"
20.	Kapus	337	42.40	Veerraju and Satyanarayana'72
21.	Jatapu	52	42.30	Rao'77
22.	Kondakapu	51	41.18	Present study
23.	Kolams	133	38.34	Rao'77
24.	Plain kapu	95	37.90	Present study
25.	Chenchus	35	28.57	Rao & Aruna'75
26.	Gadaba	28	21.42	Rao'77

TABLE NO. XX (a)

FREQUENCY OF R. TYPE OF HANDCLASPING AMONG INDIAN POPULATIONS

(FEMALES)

S1. No.	Population	Number	Percentage	Author and year
1	2	3	4	5
1.	Kolam	35	65.71	Rao '76
2.	Sundris	80	62.50	Mahapatra '70
3.	Kandayats	81	60.50	" "
4.	Bengali Brahmins	96	57.30	" "
5.	Kayastha	82	57.30	" "
6.	Somantha	46	56.52	Rao '77
7.	Oriya Brahmins	103	53.40	Mahapatra '70
8.	Kondadora	16	50.00	Rao '77
9.	Kapus	22	50.00	Veerraju & Satyanarayana '72
10.	Gadaba	100	55.55	Deka and Pattojoshi '75
11.	Jatapu	96	47.91	Rao '77
12.	Kondadora	57	47.37	Present study
13.	Chenchus	82	43.90	Rao and Aruna '75
14.	Savara	98	36.73	Rao '77
15.	Gadaba	54	33.33	Rao '77
16.	Kondakapu	49	28.58	Present study
17.	Plains Kapu	5	20.00	" "

Table No.XXI

R. TYPE OF ARM FOLDINGS AMONG SOME INDIAN
POPULATIONS

(MALES.)

Sl.No.	Population	Number	Percentage	Author and Year
1.	Kapus	337	55.49	Veeraju and Satyanara- yana'72
2.	Chenchu	35	54.29	Rao and Aruna'75
3.	Gadaba	28	50.00	Rao'77
4.	Gadaba (Orissa)	345	48.69	Deka and Pattojoshi 1975
5.	Kavasthas	83	48.19	Mahapatra'70
6.	Plains Kapu	95	47.37	Present study
7.	Kolams	133	47.36	Rao'76
8.	Kondakapu	51	47.06	Present Study.
9.	Kondadora	43	46.52	" "
10.	Kandayats	95	45.68	Mahapatra'70
11.	Bangalees	529	44.23	" "
12.	Oriyabrahmins	97	43.30	" "
13.	Karan	85	42.35	" "

1	2	3	4	5
14.	Sundris	79	40.57	Mahapatra'70
15.	Bangalees	258	37.60	Chattopadhy- ay'67
16.	Jatapu	52	34.61	Rao'77
17.	Savara	33	33.33	" "
18.	Samantha	14	28.57	" "
19.	Kondadora	16	25.50	Rao'77

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TABLE NO. XXI (a)
R. TYPE OF ARM FOLDINGS AMONG SOME INDIAN
POPULATIONS
(FEMALES)

(FEMALES)				
1	2	3	4	5
1. Kolam	35	68.57		
2. Chenchus	82	64.63		Rao '76
3. Kayasthas	82	52.43		Rao and Aruna '75
4. Jataju	96	52.08		Mahapatra '70
5. Sundris	20	50.00		Rao '77
6. Kondadora	57	49.13		Mahapatra '70
7. Savara	98	48.97		Present study
8. Oriya Brahmins	103	48.54		Rao '77
9. Khanday-ts	81	48.15		Mahapatra '70
10. Karan	85	47.06		" "
11. Gadaba	225	43.56		" "
12. Samantha	46	43.47		Deka and Pattojoshi '75
13. Bangali Brahmins	96	42.71		Rao '77
14. Kapus	22	40.91		Mahapatra '70
15. Plainkapus	5	40.00		Veeraraju and Satyanarayana 1972.
16. Konda Kapu	49	38.78		Present study
17. Gadaba	54	29.32		Present study
18. Konda lora	16	12.50		Rao '77.
				"



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TRIBAL CULTURAL RESEARCH AND TRAINING INSTITUTE
Tribal Welfare Department
Road No. 1, Banjara Hills,
Hyderabad - 500 034 (A. P.)
Phone : 32591