

# Assessment of market availability and use of veterinary NSAIDs in Uttarakhand



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# Introduction



- ❧ Veterinary drugs like diclofenac, ketoprofen, nimesulide, flunixin and aceclofenac are among the toxic NSAIDs for vultures especially the critically endangered Gyps species,
- ❧ NSAIDs commonly in veterinary use has not been assessed,
- ❧ A survey was conducted to understand market availability and their use in veterinary treatment by farmers,

# Uttarakhand and its importance in vulture conservation issues



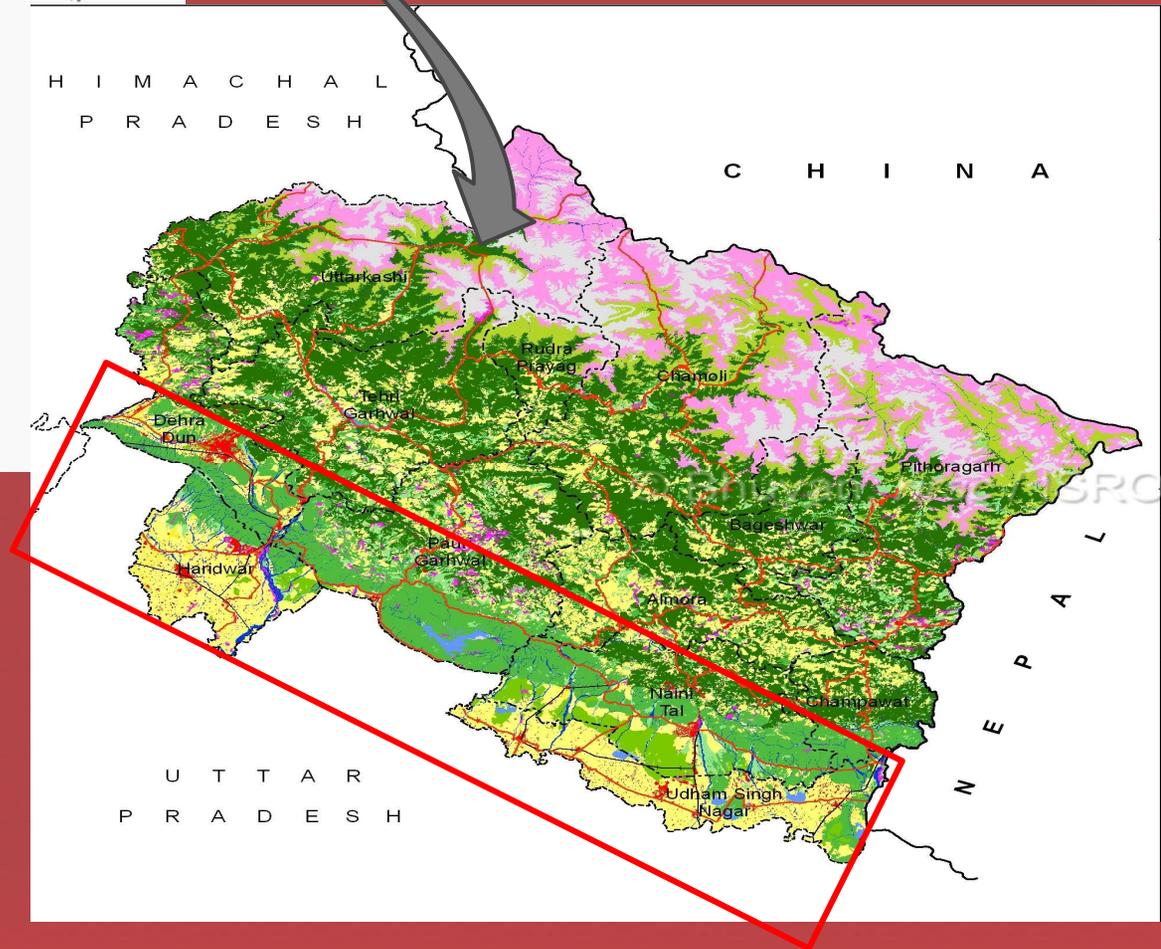
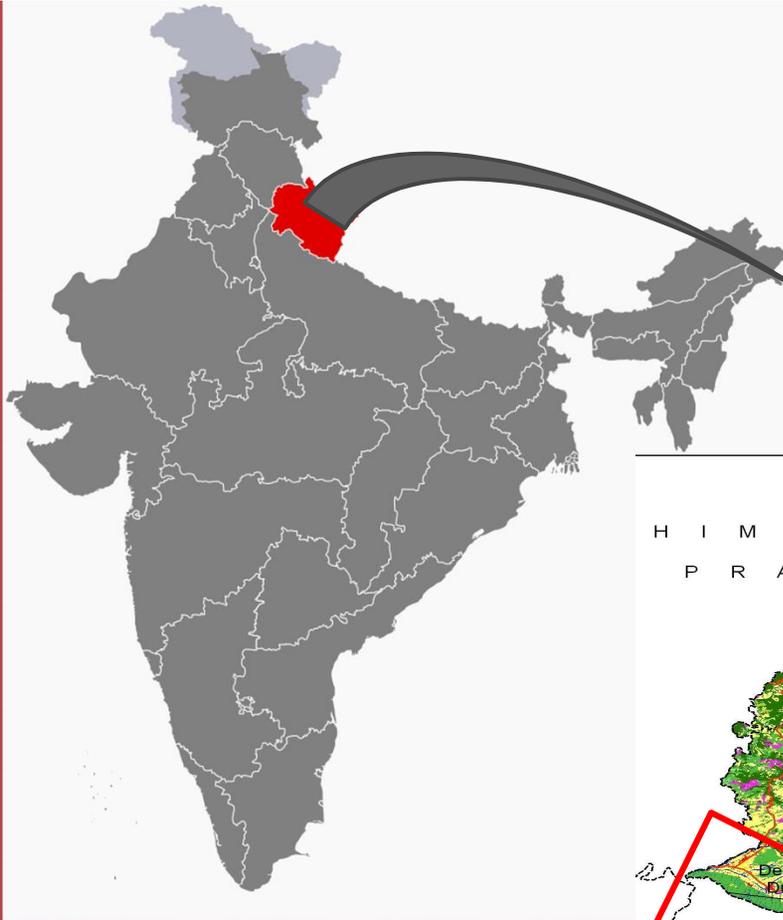
- ❧ Extends over a geographical coverage about 54000 Sq km, with elevation range from 300 m asl to 7800 m asl,
- ❧ Unique ecological setting, and provides habitat to all nine species of vultures found in India,
- ❧ Scattered populations of all four critically endangered vultures were recorded in the state the present study,
- ❧ Unique wintering habitat to migratory vultures,
- ❧ Identified as one of the provisional Vulture Safe Zone (pVSZ) in India,

## Contd...



- The study area in terai region is in the vicinity of about 70-100 km from Morni Hills and Vulture Conservation Breeding Centre, Pinjore,
- Many of the areas are expected to be used by captive bred vultures from Morni Hills, when released,
- Terai region of the state is also important for transboundary vulture movement, as monitored of satellite tagged vulture from Nepal

# Study area



# NSAIDs Surveys



- ❧ We conducted questionnaire surveys to understand market availability of veterinary NSAIDs and use in Uttarakhand state during 2016 to 2018, with major focus on the six Terai districts,
- ❧ 260 pharmacies in 2016-2017, and 156 pharmacies since March 2018 were surveyed,
- ❧ Direct purchase of available NSAIDs from 30 pharmacies were made,
- ❧ 200 households surveys were also conducted to understand NSAIDs use in their livestock treatment,
- ❧ We collected 120 tissue samples (cattle and buffalo) during 2016-17 from six carcass dumping sites of Dehradun and analyzed 100 samples for detecting the presence of banned diclofenac,
- ❧ We also collected information on purchase, supply and use of different NSAIDs by the state veterinary department (from headquarter and all 13 districts)





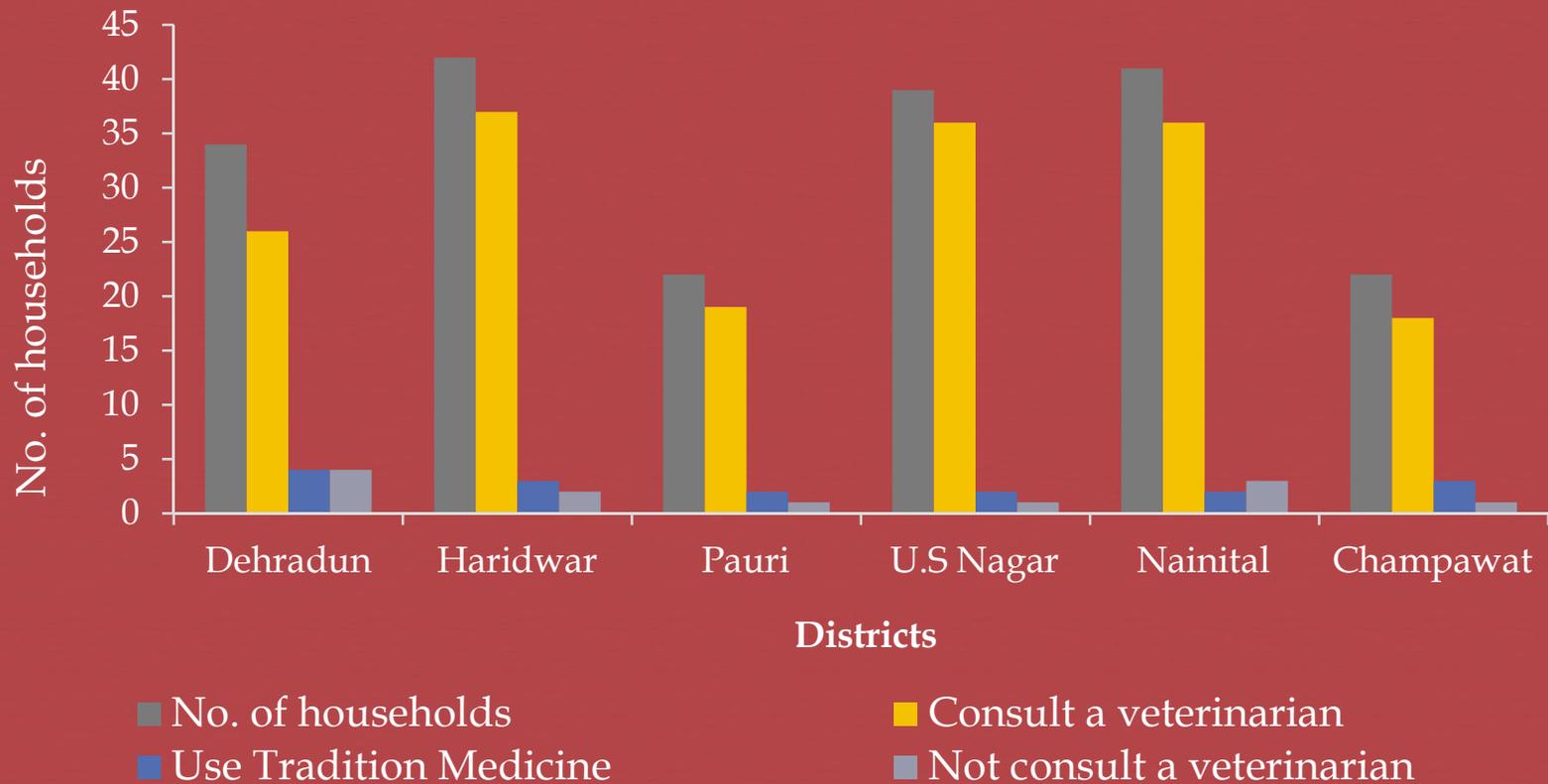
# Results



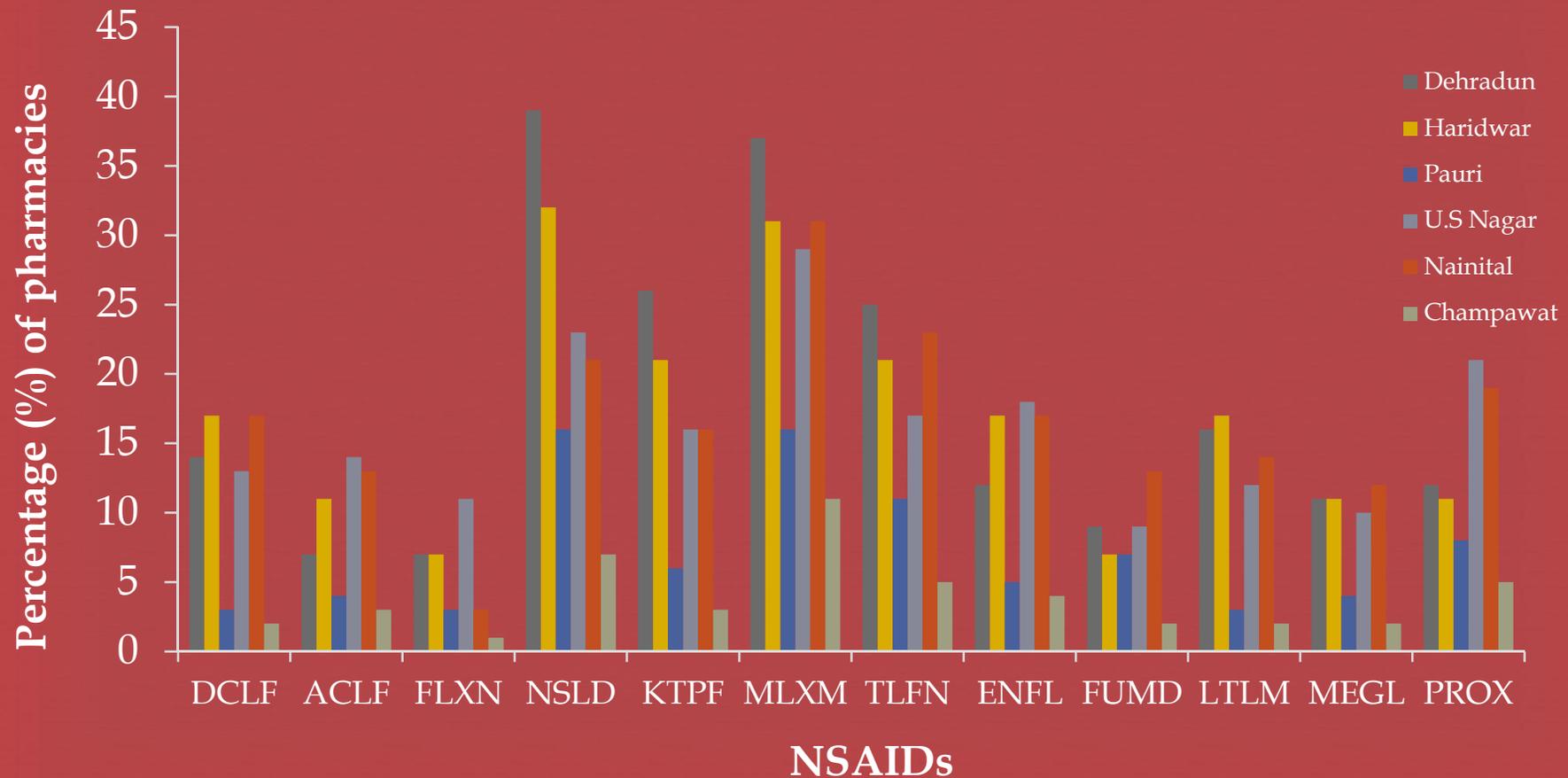
## Use of NSAIDs by farmers and awareness on their toxicity:

- ❧ About 88 percent of respondents do not know about the drugs given by veterinarian in livestock treatment,
- ❧ Only about 10 percent of respondents were aware about vulture mortality due to diclofenac, however, unaware about other drugs,
- ❧ Some of the respondents reported an unknown drug used for enhancing milk production as a major reason behind vulture decline in the region,

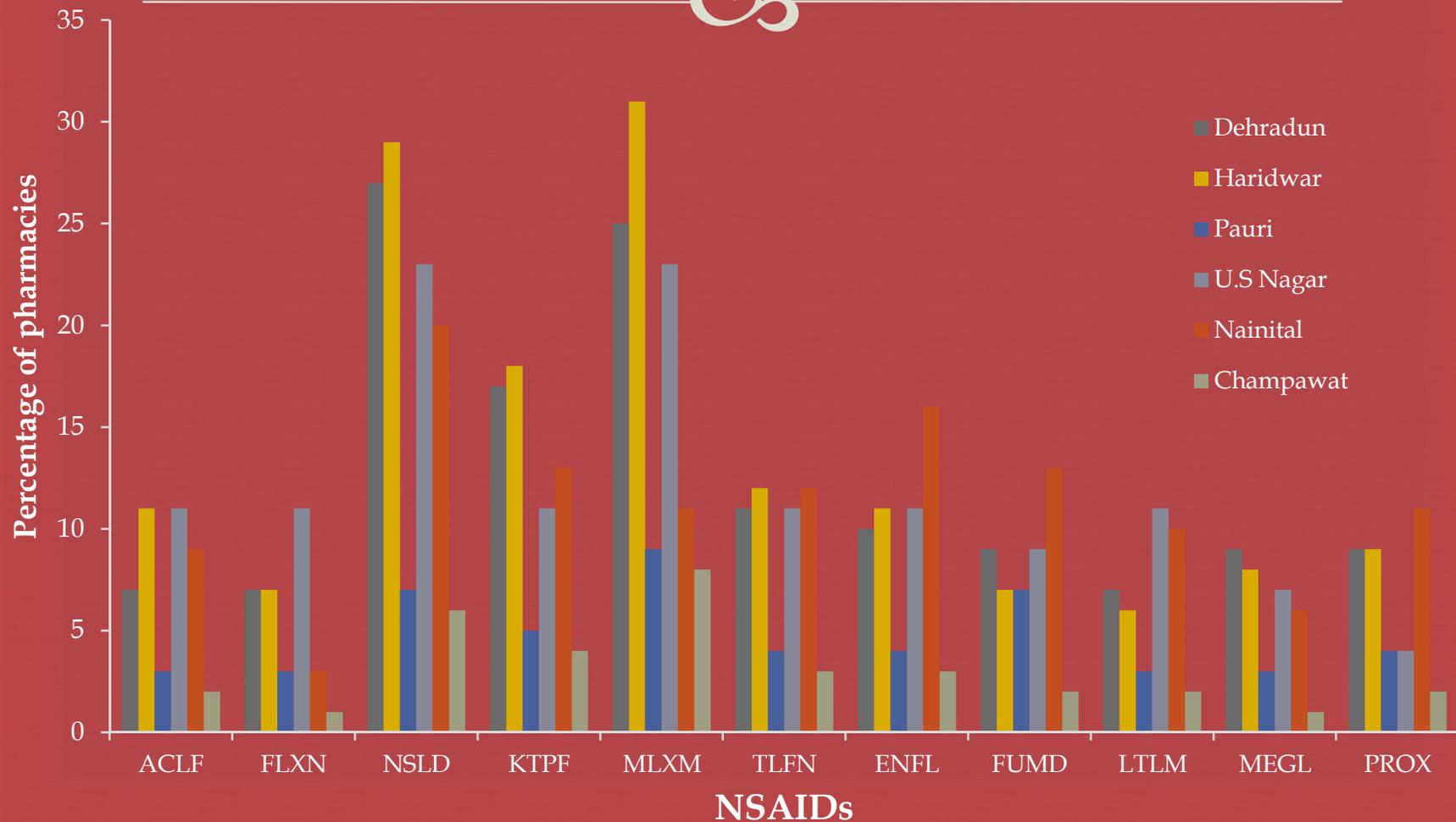
# Awareness on NSAIDs use among the livestock owners



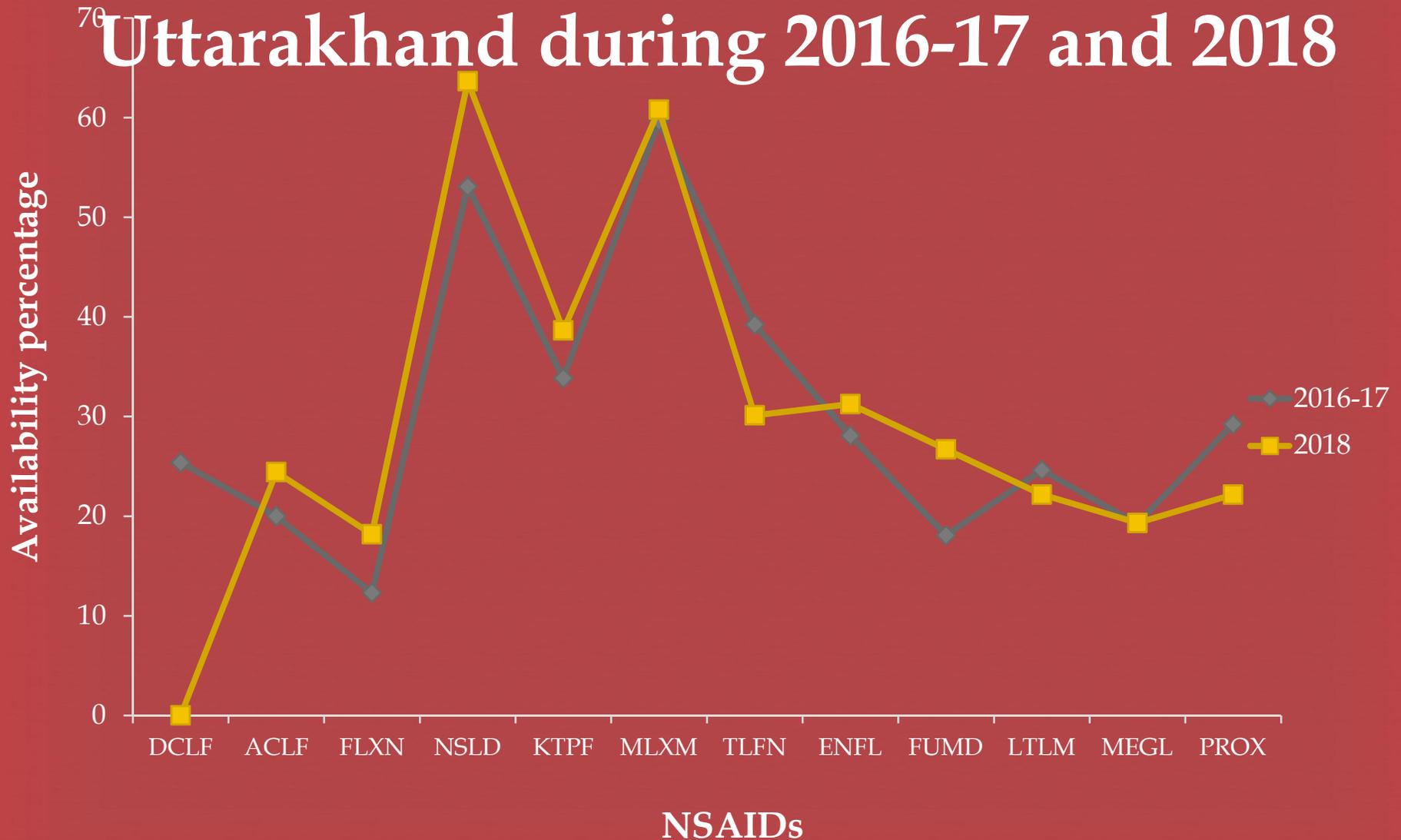
# NSAIDs availability with pharmacies in 2016-17



# NSAIDs availability with pharmacies in the year 2018



# Comparison of the availability of different NSAIDs in pharmacies of Uttarakhand during 2016-17 and 2018



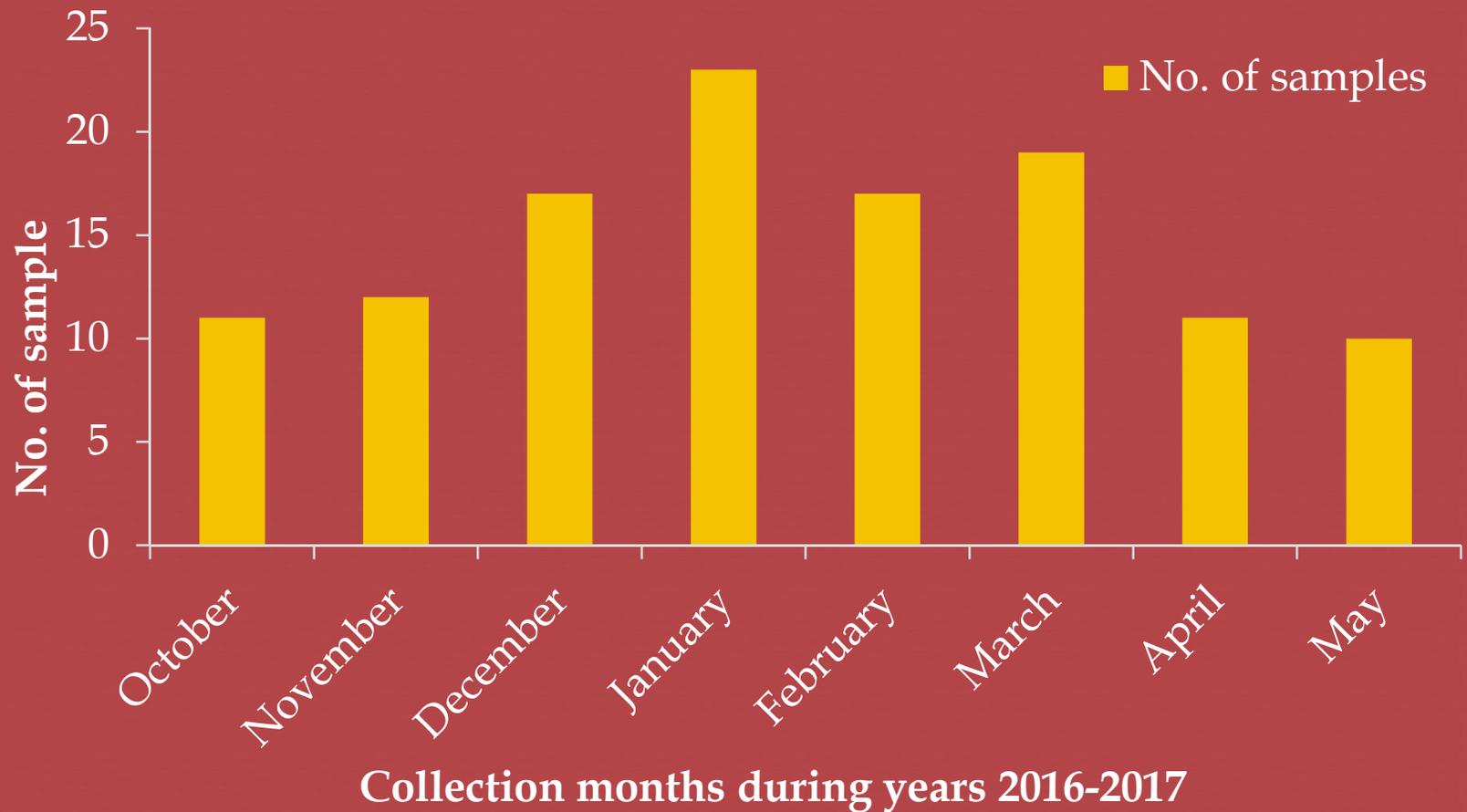


# NSAIDs Purchase and distribution by state agencies

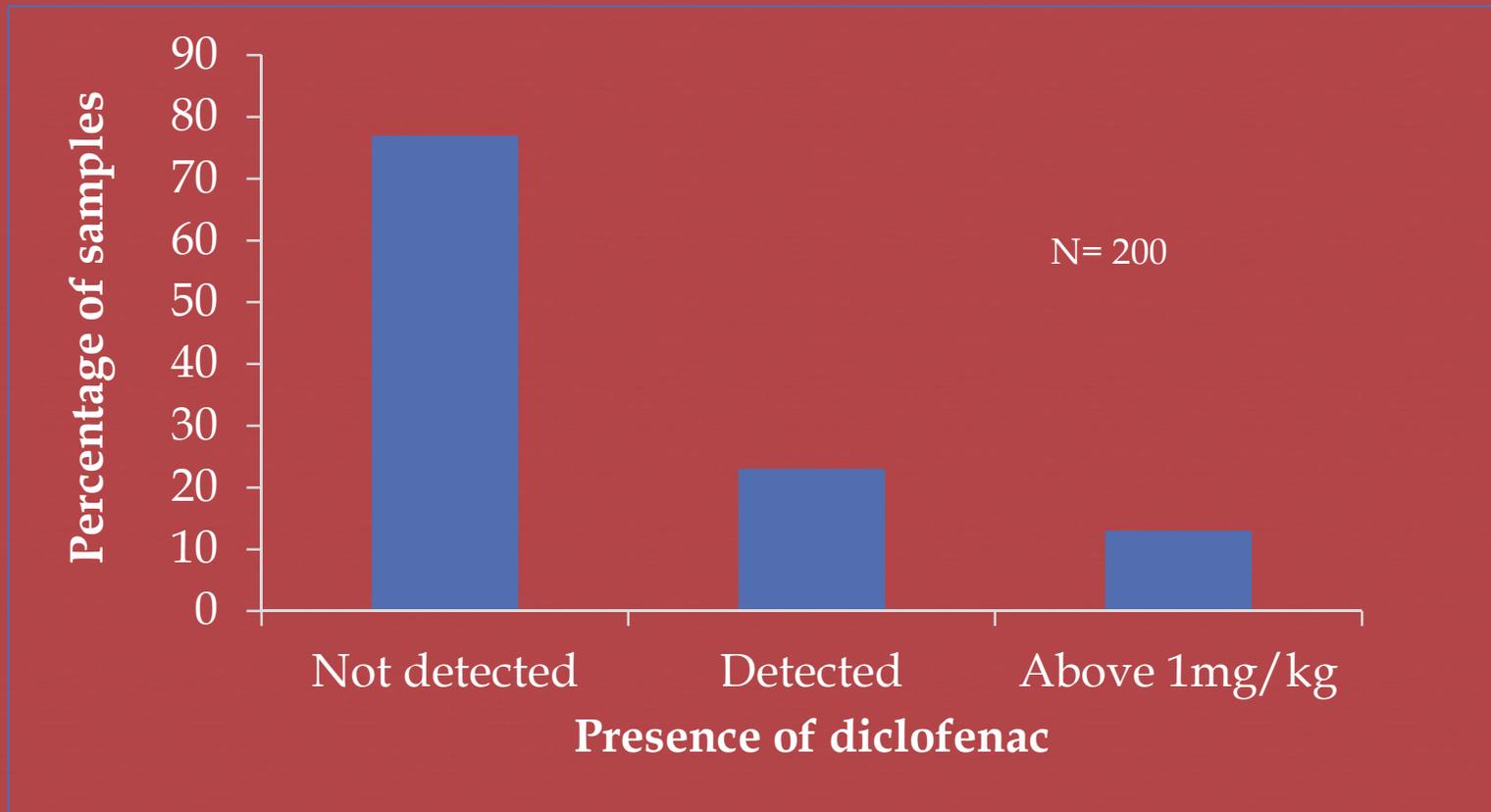
Districts	DCLF	ACLF	FLXN	NSLD	KTPF	MLXM	ENFL	TLFN	PROX
Headquarter	-	-	+	+	+	+	+	+	+
Dehradun	-	-	+	+	+	+	+	+	+
Haridwar	-	-	+	+	+	+	+	+	+
Tehri	-	-	+	+	+	+	+	+	+
Pauri	-	-	+	+	+	+	+	+	+
Uttarkashi	-	-	+	+	+	+	+	+	+
Rudraprayag	-	-	+	+	+	+	+	+	+
Chamoli	-	-	+	+	+	+	+	+	+
U.S Nagar	-	-	+	+	+	+	+	+	+
Nainital	-	-	+	+	+	+	+	+	+
Almora	-	-	+	+	+	+	+	+	+
Bageshwar	-	-	+	+	+	+	+	+	+
Pithoragarh	-	-	+	+	+	+	+	+	+
Champawat	-	-	+	+	+	+	+	+	+

+ = purchased and supplied; - = not purchased and supplied

# Livestock tissues collected in Dehradun district



# Diclofenac presence in livestock tissues in Dehradun districts



Diclofenac presence was observed in a total of 23 percent samples, however, the concentration above 1 mg/kg was observed only in 13 percent of the analyzed samples. Moreover, the presence of diclofenac was not observed in any samples collected after the March 2017.

# Tissue sample collection was carried out in Dehradun because of the following reason

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- ❧ Western most district of the state and closest to the Pinjore and Morni hills,
- ❧ Maximum population of vultures including critically endangered vultures were recorded in Dehradun district,
- ❧ Maximum livestock carcasses were recorded in the district,
- ❧ Maximum mortality of vultures were recorded from the district,

# Future focus of target on veterinary NSAIDs



- ❧ Increase awareness on use of vulture safe NSAIDs to the veterinary department,
- ❧ Explore possibility of restriction on the use of vulture toxic NSAIDs,
- ❧ Focused awareness building among the rural areas (farmers and pharmacies),
- ❧ Sharing of information with state forest department about status of NSAIDs use in each districts,

# Acknowledgements



## **For financial support:**

- ∞ Conservation Leadership Programme (CLP)
- ∞ Oriental Bird Club, UK
- ∞ Rufford Foundation, UK
- ∞ MBZ Species Conservation Fund, UAE

## **For permission and logistic support:**

- ∞ Uttarakhand Forest department



Thank you