

## Medicinal plants of Peru: Respiratory treatments

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Plant identity and use data of medicinal mixtures were collected in South America by William L. Brown Center staff. Data were coded as two presence-absence matrices with “1” representing presence and “0” representing absence: A: with plant species as columns and sources (marketplace vendors, healers, historical references, and surveys) as rows and B: with plant species as columns and medicinal mixture as row. The R statistical framework package ‘vegan’ was used to create a distance matrix (distances represent dissimilarity in plants species ‘communities’). Distances were formed into hierarchical clusters and plotted as dendrograms for analysis. Distance is a measure of how related or how much is dissimilarity there is between two pieces of data. 510 overall species were found with medicinal properties, with 2,499 uses for those plants and 278 different medical conditions. Historical sources clustering alone on dendrogram and ordination show experimentation with plant use. Small areas that maintain historical knowledge of plant use (healers that clustered with surveys). Few healers share plants/plant knowledge with vendors. Individual market vendors typically contain many of the same plants. They must be everyday plant uses and not very unique. Three healers seem to have a lot more plants, newer and older, than the vendors, though when historical sources are removed these healers cluster somewhat closely to a few vendors with whom they may buy plants or they collect in the same area. For respiratory problems 95 different species were found with 233 uses. A variety of plant mixtures are used to treat respiratory illnesses but are also used for other illnesses. There were two important questions that were queried in this experiment and analysis. The first important question is how do medicinal plant uses by market vendors and healers compare to plant uses by market vendors and healers historically? From the dendrogram analysis we can see that market vendors don’t ever cluster with historical sources; therefore, they have probably not retained much knowledge of historical plant use. Also vendors experiment with a lot of new plants or simply just have a lot of common plants that are easily accessible with well-known uses (i.e. tea mixtures and wound treatments). Healers cluster closely with some historical surveys, but are more closely related to modern sources. They likely have greater knowledge of plant mixtures that were used for treatment in the past, but are also experimenting with new cures or have developed new cures. The second question to be answered was how are respiratory illnesses treated with traditional medicine? The dissimilarity matrix showed, as one might expect after seeing the market results, that there are many different ways to treat respiratory illnesses. Treatments are quite dependent on what they believe the illness is and how they diagnose it from there. Treatment combinations range from analgesics, antibacterial and anti-inflammatories that are very useful for treating respiratory problems to diuretics, psychotropic, laxative, and love potions.