A watermark based biometric identification and authentication system and method for validating at least one biometric trait with respect to an individual in a secured environment. At least one biometric trait including a fingerprint, a palm vein and a face image can be captured using an image processing unit in order to thereby process the captured biometric trait for extracting at least one feature with respect to the individual. The features with respect to the biometric traits are further stored into appropriate databases such as a fingerprint database, a palm vein database and a face image database separately in order to thereby form a watermark image with respect to the individual. The watermark image consisting of the biometric traits of the individual can be further stored into a smartcard or physical medium in order to thereby retrieve the biometric traits for validating the individual in a secured environment. The biometric system can verify and validate the credentials of the individual by evaluating every biometric trait of the individual stored in the databases.