Age, however, will not account in all cases for the uncertainty of commercial preparations. Oftener it is due to the more or less inert natural products from which these preparations are made. That the physiological activity of the hemp plant varies with the locality in which it is grown is well known, and it has been suggested that the *ganja* of Bombay and the Central Provinces, which is "infinitely inferior" to that of Bengal, finds its way into European pharmacy. "There is also good reason to believe that the Indian hemp merchants, who deal with the drug in the first instance as an article of excise consumed locally, are in the habit of supplying to the European drug exporter or his agents samples for which, owing to the partial or complete loss of activity, they can no longer find a native market."

The first European, says the author, to investigate with any degree of scientific accuracy the action of Indian hemp was O'Shaughnessy, in 1839. He used an alcoholic extract made by boiling freshly prepared ganja with rectified spirit in a Papin's digester and evaporating the spirituous extract to dryness on a water bath. The substance thus obtained was very active; half a grain produced a distinct effect, and a grain and a half was considered by O'Shaughnessy a large dose. In 1846 the resin in a state of comparative purity was obtained by T. and H. Smith, and they gave it the name of cannabin. It was extremely active; two-thirds of a grain produced narcosis, and a grain, decided intoxication. In 1848 De Courtive also isolated an active resin.

Notwithstanding the investigations of O'Shaughnessy, Smith and De Courtive, it was thought that cannabis might contain some alkaloidal principle. Preobraschensky, in 1876, obtained nicotine from a specimen of hasheesh procured in Turkestan and from the flowering tops of the plants. As cannabis preparations are usually smoked in combination with tobacco, Dragendorff and Marquiss suggested that the nicotine was derived from admixture with the substance—a supposition proved by Siebold and Bradbury (1881) and Kennedy (1886). Although Kennedy failed to obtain nicotine, he was of opinion that an alkaloid was present, and Siebold and Bradbury also isolated a varnishlike base which they termed *cannabinine*, which gave alkaloidal reactions. The substance had an odor of coniine, but was not identical with it. Only two grains were obtained from ten pounds of the drug. Arutinianz and Masing, on the contrary, obtained no alkaloid. In 1883 Hay discovered an alkaloid which produced tetanus in frogs, to which he gave the name of *tetanocannobine*. It was present in very small amount and its elementary composition was not determined. His results led him to believe that other alkaloids were present, but these do not appear to have been isolated. Denzel (1885) also abtained a tetanizing alkaloid from hemp, but Warden and Waddell (1884), working on large quantities of material, obtained no such compound. It is only fair to state, says Mr. Marshall, that the process employed was slightly different from Hay's, and a cat instead of a frog was used to determine its effect. A nicotine-like substance was obtained, but this proved to be physiologically inert. Jahns (1887) also states that *tetanin* does not exist. More recently (1891) H. F. Smith has isolated an alkaloid resembling coniine from Indian hemp, but in such small quantity (0.75 milligramme to the kilogramme) as to render it therapeutically unimportant. Still more recently (1895) Marino-Zuco and Vignola have prepared an alkaloid from various parts of *Cannabis indica* and *Cannabis sativa*, but neither alkaloid possesses the characteristic action of cannabis compounds. Physiologically, they are cardiac depressants, the alkaloid from cannabis indica being much the more powerful.