Chapter 21

DNA Content (C-Values), Chromosome Numbers, and Mating System of Medicinal, Aromatic, and Stimulant Plants

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Medicinal, aromatic, and stimulant plants are common in nearly all plant families. The historical knowledge is based more on long experience of folk medicine than on scientific research. In a number of species (not in terms of quantity), the major parts of medicinal, aromatic, or stimulant plants are still collected from the wild; cultivation is rather the exception. However, the number of species domesticated increases fast with breeding as one of the most important processes driving the economic efficiency of cultivation. Absolute prerequisite for a systematic improvement through breeding is the knowledge of scientific biological basics like mating system, ploidy level, and DNA content. This is especially true where a molecular method gives us better insights and is planned to speed up the breeding process.

The following compilation summarizes the results of DNA content (C-values), chromosome numbers, and mating system from 2255 species. Although this number seems to be high, it is still below 10% of all plants used by man as medicine (Willis 2017). For this compilation, some very helpful databases need to be highlighted, like the “Angiosperm DNA C-Value Database” (Bennett and Leitch 2012) and the “Index to Plant Chromosome Numbers” (Goldblatt and Johnson 1979). Furthermore, *The Families and Genera of Vascular Plants* (Kubitzki 1990–2016), *Dictionary of Cultivated Plants and Their Centres of Diversity* (Zeven and Zhukovsky 1975), *The Encyclopedia of Herbs and Spices* (Ravindran 2017), and *Culinary Herbs* (Small 1997) were important reference points facilitating this compilation.

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