

Application of Essential Oils (Lavender, Sweet Orange and Roman Chamomile) Improves Sleep by Regulating the Hypothalamus in Pcpa-Induced Insomnia Rat Model

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SUMMARY. Insomnia is one of the most common sleep disorders that seriously affect people's lives. The use of essential oils (aromatherapy) for insomnia has been explored recently; however, whether the plant essential oil aromatherapy can alleviate insomnia by regulating the hypothalamus has not been reported. We selected three representative plant essential oils: Lavender, Sweet orange and Roman chamomile, to investigate whether they regulate important neurotransmitters and morphology in the hypothalamus. The insomnia rats were induced by intraperitoneal injection of PCPA. The insomniac rats were induced sleep by intraperitoneal injection of pentobarbital sodium. Then the insomniac rats were treated with essential oils, recorded the change of sleep latency and sleep duration, observed changes of hypothalamus morphology and levels of 5-HT, GABA, NE, DA and IL-1 β in the hypothalamus. The results showed that all three essential oils could improve sleep, and lavender essential oil had the most significant improvement on insomnia in rats. Lavender oil mainly impacted DA, GABA and IL-1 β ; Roman chamomile oil mainly impacted 5-HT and NE; sweet orange oil only impacted 5-HT in rat hypothalamus. All three essential oils affected the morphology of hypothalamus. The ameliorative effects of aromatherapy with essential oils on certain types of insomnia may function through hypothalamus and then the hepatitis neuroendocrine system.

RESUMEN. El insomnio es uno de los trastornos del sueño más comunes que afectan gravemente la vida de las personas. Recientemente se ha explorado el uso de aceites esenciales (aromaterapia) para el insomnio; sin embargo, no se ha informado si la aromaterapia con aceites esenciales de plantas puede aliviar el insomnio mediante la regulación del hipotálamo. Seleccionamos tres aceites esenciales de plantas representativas: lavanda, naranja dulce y manzanilla romana, para investigar si regulan neurotransmisores importantes y la morfología en el hipotálamo. Se indujo el insomnio de las ratas mediante inyección intraperitoneal de PCPA. A las ratas insomnes se les indujo el sueño mediante una inyección intraperitoneal de pentobarbital sódico. Luego, las ratas insomnes fueron tratadas con aceites esenciales, se registró el cambio de la latencia del sueño y la duración del sueño, se observaron cambios en la morfología del hipotálamo y los niveles de 5-HT, GABA, NE, DA e IL-1 β en el hipotálamo. Los resultados mostraron que los tres aceites esenciales podían mejorar el sueño, y el aceite esencial de lavanda tuvo la mejoría más significativa en el insomnio en ratas. El aceite de lavanda afectó principalmente a DA, GABA e IL-1 β ; El aceite de manzanilla romana afectó principalmente a 5-HT y NE; el aceite de naranja dulce solo afectó a 5-HT en el hipotálamo de rata. Los tres aceites esenciales afectaron la morfología del hipotálamo. Los efectos de mejora de la aromaterapia con aceites esenciales en ciertos tipos de insomnio pueden funcionar a través del hipotálamo y luego del sistema neuroendocrino de la hepatitis.

KEY WORDS: aromatherapy, hypothalamus, insomnia, plant essential oils.

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