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Prevention and treatment of cancer: Huaier regulates tissue homeostasis and cell proliferation by modulation of disrupted transcription control in the Hippo signaling pathway

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A mong historical nature remedies in Eastern Asia, Huaier (*Trametes robiniophila Murr.*) has long been reported for its significant efficacy on longevity and health maintenance, and more importantly, on cancer. The target cancers of Huaier overlap with those strongly influenced by the Hippo pathway, which is also well known as a tumor suppressor mechanism. Here we show a role of Hippo pathway as a main controlling mechanism of Huaier effect. The present study demonstrated that anti-cancer effect was a result of recovery of transcriptional dysregulation in Hippo pathway. We used *Drosophila* flies genetically disrupted transcriptional control in Hippo pathway with overexpressing non-phosphorylatable Yorkie (Yki:V5S168A) as an experimental model. The administration of Huaier clearly resulted in the recovery of rough eye formation caused by overabundant transcriptional signals in the mutants, indicating the modulation and the reconstruction of tumor suppressor mechanism. These improvements occurred in a dose-dependent manner, just as shown in clinical observations. The GC/MS-based metabolome analysis changed the metabolic profile to the early embryonic pattern. Judging from a broad spectrum of its efficacy, Huaier can provide a solution to a broad range of transcriptional dysregulation diseases, not only in cancer, but also many degenerative diseases via modulation of Hippo pathway control.

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