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ORIGINAL ARTICLE

Are people who have a better smell sense, more affected from satiation?☆

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KEYWORDS
Sniffin' Sticks test;
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Abstract
Introduction: The olfactory system is affected by the nutritional balance and chemical state of the body, serving as an internal sensor. All bodily functions are affected by energy loss, including olfaction; hunger can alter odour perception.
Objective: In this study, we investigated the effect of fasting on olfactory perception in humans, and also assessed perceptual changes during satiation.
Methods: The ''Sniffin' Sticks'' olfactory test was applied after 16 h of fasting, and again at least 1 h after Ramadan supper during periods of satiation. All participants were informed about the study procedure and provided informed consent. The study protocol was approved by the local Ethics Committee of Gaziosmanpaşa Taksim Education and Research Hospital (09/07/2014 no: 60). The study was conducted in accordance with the basic principles of the Declaration of Helsinki.
Results: This prospective study included 48 subjects (20 males, 28 females) with a mean age of 33.6 ± 9.7 (range 20–72) years; their mean height was 169.1 ± 7.6 (range 150.0–185.0) cm, mean weight was 71.2 ± 17.6 (range 50.0–85.0) kg, and average BMI was 24.8 ± 5.3 (range 19.5–55.9). Scores were higher on all items pertaining to olfactory identification, thresholds and discrimination during fasting vs. satiation ($p < 0.05$). Identification (I) results: Identification scores were significantly higher during the fasting (median = 14.0) vs. satiation period (median = 13.0). Threshold (T) results: Threshold scores were significantly higher during the fasting (median = 7.3) vs. satiation period (median = 6.2). Discrimination (D) results: Discrimination scores were significantly higher during the fasting (median = 14.0) vs. satiation period (median = 13.0). The total TDI scores were 35.2 (fasting) vs. 32.6 (satiation). When we compared fasting threshold value of >9 and ≤9, the gap between the fasting and satiety thresholds was significantly greater in >9 ($p < 0.05$).

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Conclusion: Olfactory function improved during fasting and declined during satiation. The olfactory system is more sensitive, and more reactive to odours, under starvation conditions, and is characterised by reduced activity during satiation. This situation was more pronounced in patients with a better sense of smell. Olfaction-related neurotransmitters should be the target of further study.

PALAVRAS CHAVE
Teste de Sniffin' Sticks;
Período de jejum;
Período de saciedade;
Seres humanos;
Função do olfato

As pessoas que têm melhor olfato são mais afetadas pela saciedade?

Resumo
Introdução: O sistema olfatório é afetado pelo equilíbrio nutricional e estado químico do corpo, que serve como um sensor interno. Todas as funções corporais são afetadas pela perda de energia, incluindo o olfato; a fome pode alterar a percepção do odor.
Objetivo: Neste estudo, investigamos o efeito do jejum sobre a percepção olfativa em seres humanos, e também avaliamos as mudanças de percepção durante a saciedade.
Método: O teste olfatório ''Sniffin Sticks'' foi aplicado após 16 horas de jejum e novamente pelo menos 1 hora após a ceia do Ramadã durante os períodos de saciedade. Todos os participantes foram informados sobre os procedimentos do estudo e forneceram o consentimento informado. O protocolo do estudo foi aprovado pelo Comitê de Ética local do Gaziosmanpaşa Taksim Education e Research Hospital (2014/09/07 n° 60). O estudo foi conduzido de acordo com os princípios básicos da Declaração de Helsinki.
Resultados: Foram incluídos 48 pacientes (20 homens, 28 mulheres) com idade média de 33,6 ± 9,7 (variação 20-72) anos; a altura média deles era de 169,1 ± 7,6 (variação 150,0-185,0) cm, o peso médio era de 71,2 ± 17,6 (variação de 50,0-85,0) kg e IMC médio era de 24,8 ± 5,3 (variação de 19,5-55,9). Os escores foram maiores em todos os itens correspondentes à identificação olfativa, limiares e discriminação durante jejum vs. saciedade ($p < 0,05$). Resultados da identificação (I): os escores de identificação foram significativamente maiores durante o jejum (mediana = 14,0) vs. período de saciedade (mediana = 13,0). Resultados limiares (T): os escores limiares foram significativamente maiores durante o jejum (mediana = 7,3) vs. período de saciedade (mediana = 6,2). Resultados de discriminação (D): os escores de discriminação foram significativamente maiores durante o jejum (mediana = 14,0) vs. período de saciedade (mediana = 13,0). Os escores totais de TDI foram de 35,2 (jejum) vs. 32,6 (saciedade). Quando comparamos o valor do limiar de jejum de >9 e ≤9, a diferença entre os limiares de jejum e de saciedade foi significativamente maior em >9 ($p < 0,05$)
Conclusão: a função olfatória melhorou durante o jejum e diminuiu durante a saciedade. O sistema olfatório é mais sensível e mais reativo aos odores em condições de fome e é caracterizado por atividade reduzida durante a saciedade. Esta situação foi mais pronunciada em pacientes com um melhor sentido olfativo. Os neurotransmissores relacionados com o olfato devem ser alvo de um estudo mais aprofundado.

Introduction

All bodily functions are affected by energy loss, including olfaction; hunger can alter odour perception. Changes in subjective evaluation of an unchanging food stimulus are commensurate with changes in hunger state[1]; recent evidence suggests that hunger state can similarly affect food odour pleasantness.[2] Although the mechanisms underlying alterations for food and odour stimuli (e.g., from positive to negative following satiation) are not yet understood, loss of energy is linked to changes in olfactory bulb activity[3] and olfactory sensitivity in rats.[1,4]

The olfactory system is affected by the nutritional balance and chemical state of the body, serving as an internal sensor.[1] The endocrine and olfactory systems are linked closely. Hormones and metabolic peptides may be orexigenic or anorexigenic, depending on their inhibition or stimulation of food intake. The hypothalamus and several other parts of the brain, including olfactory regions, are stimulated by leptin and insulin, causing an anorexigenic effect.[5]