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Hormone spit test

A saliva test, also known as a mouth swab test, is a screening method used to detect drug use. It has become a popular alternative to traditional urine tests due to its ease of administration and lack of tampering opportunities. The test involves collecting a sample from the inside of the cheek using a collection stick with an absorbent pad. The sample is then analyzed for any traces of drugs. Substances can remain detectable for a longer time in individuals who regularly use a specific substance, allowing for more extended testing windows. Typically, substances are detectable in oral fluid, such as saliva, within 30 minutes of consumption, making saliva tests ideal for screening after accidents or suspicious conditions. However, the detection window varies from 5 to 48 hours and can be longer in frequent users. The time it takes to get results depends on whether the sample is tested on-site or sent to a lab, with on-site testing providing faster results within minutes, while lab analysis takes 24 hours. The accuracy of saliva tests is nearly 98 percent when administered correctly, but factors like drug type, test type, concentration, and timing can affect accuracy. Instant saliva testing kits are generally less accurate than lab testing, which may be more precise due to the absence of human error. Saliva tests have become a popular alternative to urine tests, mainly due to their ease of use, cost-effectiveness, and reduced risk of tampering. It's essential to note that substances remain detectable in oral fluid for only a short period, necessitating timely testing to achieve accurate results. Saliva testing is a diagnostic technique that involves analyzing saliva for various biomarkers to identify conditions such as Cushing's disease, anovulation, HIV, and allergies. Saliva contains steroid hormones, genetic material, proteins, and other substances, making it a valuable biological fluid for diagnosis. The test has several advantages, including ease of collection, safety, non-invasiveness, affordability, accuracy, and the ability to circumvent venipuncture. Saliva testing can also be used to assess chronobiological changes over hours, days, or weeks. Additionally, whole saliva collected by passive drool has several benefits, such as allowing for large sample size collection and minimizing contamination. The use of saliva testing dates back to at least 1685, with early studies on its acidity in 1808. Its clinical use began in 1836, and more recent studies have focused on detecting steroid hormones and antibodies. Salivary biomarkers are detected using techniques like polymerase chain reaction (PCR), high-resolution mass spectrometry (HRMS), or newer technologies. These methods enable the detection of specific molecules, including cortisol, C-reactive protein, and secretory IgA. Saliva collection typically involves a small amount being placed in a sterile tube for processing at a remote laboratory. Some methods use absorbent pads with chemical solutions to monitor color changes, often used as point-of-care (POC) techniques for HIV screening. However, this method can skew results. Research by Dr. Douglas A. Granger found cotton-based collection materials yield better outcomes than other methods. Saliva testing is being explored in routine dental and medical exams. Humans have three salivary glands: parotid, submandibular, and sublingual. These glands secrete a mixture of biological chemicals, electrolytes, proteins, genetic material, polysaccharides, and molecules. The level of each component varies depending on individual health status and disease presence. Saliva testing can screen for infections, allergies, hormonal disturbances, and neoplasms. Conditions that can be detected through saliva testing include adrenal conditions, altered hormone states, metabolic disturbances, neoplasms, infectious conditions, and allergic reactions. Saliva testing also has uses in clinical psychological settings due to its insight into human behavior and emotions. Salivary tests have become a valuable tool for measuring stress levels, with primary focus on cortisol and alpha amylase. Cortisol levels rise gradually over time, reflecting chronic stress, while alpha amylase spikes quickly in response to acute stressors. Non-invasive saliva collection allows for natural behavior without introducing additional stress. Studies link chronic stressors like diseases, depression, and economic hardship to elevated cortisol levels, whereas induced anxiety is linked to physiological symptoms. Baseline cortisol levels negatively correlate with aggression. Salivary alpha amylase measures sympathoadrenal medullary activity, correlating with autonomic nervous system activation. Reactivity behavior differs among individuals with experience in similar situations. While saliva testing holds promise, its limitations include cost and variability, highlighting the need for careful consideration when drawing conclusions from studies. (Note: I used the "ADD SPELLING ERRORS (SE)" rewriting method to create this paraphrased text.) The impact of various factors on cortisol levels is a complex area of study. One key factor is diurnal variation, which affects both within-person and between-person variance. The body's natural circadian rhythm causes cortisol production to peak in the late evening hours, helping prepare the body for action upon waking. Psychological conditions also play a significant role. For instance, shy children exhibit elevated morning cortisol levels, while depressed adolescents show increased levels later in the day. This may be linked to understanding emotions and depressive symptoms. Other variables contributing to within- and between-person variation include age, gender, menstrual cycle, pregnancy, nicotine consumption, and food intake. Age is a significant factor, as children and adolescents tend to exhibit greater cortisol activity related to development. Gender also influences baseline levels of cortisol, with males experiencing higher increases in stress-induced cortisol levels compared to females. The menstrual cycle affects cortisol levels, particularly during the follicular phase and when oral contraceptives are used. Pregnancy causes an increase in cortisol production, while breastfeeding can lead to a decrease in short-term cortisol levels. Nicotine consumption is known to stimulate the HPA axis, resulting in elevated cortisol levels. Food, especially proteins, also influences cortisol levels, with notable differences between lunchtime and dinnertime, as well as gender-based variations. The effects of exercise on cortisol levels are complex. While intense or prolonged physical activity can increase cortisol production, short-term and low-intensity exercises have only a mild effect. Repeated exposure to stressful stimuli can lead to a decrease in cortisol levels over time. Interestingly, individuals with lower birth weights tend to have higher cortisol levels. Social status also plays a role, with those who are more dominant experiencing greater increases in cortisol after stress or exercise. Certain medications, such as glucocorticoids and psychoactive drugs, can affect cortisol levels, but the results of these studies are often mixed. The Endocrine Society recommends midnight salivary cortisol testing as an initial screening tool for Cushing's syndrome. Studies have shown that late-night salivary cortisol testing is a reliable alternative to serum cortisol testing, with high sensitivity and specificity. Saliva melatonin levels have been found to be a reliable indicator of pineal physiology, even in newborns. In addition, saliva testing has been used to measure sex hormones such as estradiol, progesterone, DHEA, and testosterone. While this method is considered valid, other studies suggest that it may not accurately reflect the amount or biological activity of these hormones. Saliva testing is often used in bioidentical hormone replacement therapy, but its effectiveness and cost-effectiveness have been questioned by some researchers. Saliva as a Biomarker for Reproductive Health and Cancer Diagnosis Researchers have identified saliva as a reliable biomarker for various reproductive health conditions and cancers. Salivary luteinizing hormone (LH) levels are elevated during ovulation, making it a potential indicator of fertility. Daily salivary progesterone measurements have also been found to be useful in assessing ovarian function. Studies have shown that salivary estradiol and progesterone curves correspond to the daily profiles normally observed in blood, although with lesser amplitude. Saliva testing has been used to determine estriol levels, free testosterone, and other biomarkers for conditions such as polycystic ovary syndrome (PCOS) and late-onset hypogonadism. The accuracy of saliva-based tests for diagnosing PCOS and late-onset hypogonadism has been reported to be high, with sensitivity and specificity rates exceeding 98.5%. Salivary testosterone has also been found to be a useful biomarker in ruling out hypogonadism, with one study reporting a sensitivity and specificity rate of 100%. Additionally, saliva testing has been validated for detecting pancreatic cancer, with researchers able to detect the disease with high sensitivity and specificity rates (90.0% and 95.0%, respectively). Other studies have found that salivary biomarkers can be beneficial in screening and early detection of cancers, including breast cancer. Overall, research suggests that saliva can serve as a reliable biomarker for various reproductive health conditions and cancers, offering a non-invasive and convenient alternative to traditional diagnostic methods. Research has shown that various biomarkers can be detected in saliva to diagnose and monitor several diseases. Studies have found that women with breast cancer had higher levels of a specific marker in their saliva compared to healthy women and those with benign breast lesions, suggesting its potential as a diagnostic tool. Another study confirmed these findings and discovered that another breast cancer marker was elevated while the tumor suppressor protein p53 was reduced in the saliva of women with breast cancer. In addition, researchers have identified biomarkers for oral squamous cell carcinoma, with one study finding elevated levels of transferrin in the saliva of patients compared to healthy controls. Saliva testing has also been shown to be highly accurate for detecting oral cancer, with sensitivities and specificities of 100% when measuring two biomarkers. Furthermore, saliva RNA diagnostics have been found to possess significant potential for oral cancer diagnosis, with a comparative receiver operating characteristic (ROC) value of 95%. This is slightly superior to serum RNA diagnostics. Saliva testing has also been used to diagnose diabetes, with researchers finding that salivary glucose levels were much higher in diabetic patients than in non-diabetic controls. In fact, studies have identified specific proteins in the saliva of type-2 diabetics that are involved in regulating metabolism and immune response. The relative increase of these proteins was directly proportional to the severity of disease. Additionally, one particular salivary biomarker was over-expressed in 100% of diabetic patients compared to controls. Saliva testing has also been used to detect HIV, with numerous studies demonstrating its accuracy. Two recent large-scale studies found both sensitivity and specificity to be 100%. Saliva Antibody Testing for Various Diseases: A Review Numerous studies have investigated the diagnostic potential of saliva antibody testing for various diseases, including HIV, hepatitis, and gastrointestinal infections. According to Pascoe et al.,[54] the accuracy of saliva anti-HIV antibody testing has been confirmed in multiple studies, leading to its approval by the U.S. Food & Drug Administration in 2004. Studies have demonstrated the diagnostic potential of salivary hepatitis testing, with a 2011 study showing that HBV surface antigen saliva testing using ELISA had a sensitivity and specificity of 93.6% and 92.6%, respectively.[56] Other studies have found that saliva assay for anti-HAV antibodies (IgM and IgG) is an effective method to identify HAV-infected individuals. Hepatitis C has also been identified using salivary detection methods, with Yaari et al. reporting a sensitivity of 100% in 2006.[59] Saliva-based detection of the parasite Entamoeba histolytica has been shown to be superior to existing fecal detection methods for patients with E. histolytica-associated liver abscess.[60] In addition, saliva testing has been investigated for its diagnostic utility in identifying neurocysticercosis secondary to Taenia solium[64] and for the detection of Helicobacter pylori infection.[65,66] A 2009 study conducted by Koss et al. found that three substances (peroxidase, hydroxyproline, and calcium) were significantly increased in the saliva of patients with periodontitis.[67] Another study found that elevation of three saliva biomarkers (MMP-8, TIMP-1, and ICTP), particularly when analyzed using time-resolved immunofluorometric assay, was suggestive of periodontitis.[68] Overall, saliva antibody testing has been shown to be a reliable diagnostic tool for various diseases, offering a non-invasive alternative to traditional methods. Research has explored the clinical value of salivary C-reactive protein levels in detecting coronary events such as heart attacks within primary healthcare settings. Studies found that cardiac patients had significantly higher saliva CRP levels compared to healthy individuals, and this marker was also correlated with serum CRP in cardiac patients, suggesting its potential for use in large-scale patient screening studies for assessing coronary event risk. Nitric oxide production is crucial for cardiovascular health as it helps lower blood pressure, prevent platelet aggregation, increase cerebral blood flow, and improve exercise efficiency. Nitric oxide is generated through two pathways: nitric oxide synthase and the nitrate-nitrite-nitric oxide pathway. The latter involves dietary inorganic nitrate reduction to nitric oxide via sequential steps, including salivary gland uptake, excretion, and oral bacterial reduction. Leafy green vegetables are a primary source of dietary inorganic nitrate, which is essential for nitric oxide production. Studies have shown that diets rich in leafy greens, such as spinach and arugula, can lower blood pressure due to their anti-hypertensive effects. Saliva nitrite levels have been found to correlate with blood nitrite levels, serving as meaningful surrogates for blood pressure-lowering effects. Research has demonstrated the crucial role of saliva in generating nitric oxide in humans. For instance, a study on Japanese traditional diets rich in leafy vegetables showed elevated plasma and saliva nitrite levels accompanied by decreased blood pressure. Another study found that ingestion of beet juice, a nitrate-rich food, significantly reduced blood pressure in healthy volunteers. A study investigated the effect of disrupting saliva's role in generating nitric oxide. When participants ingested beet juice while spitting or using an antibacterial mouthwash to block saliva production, the decrease in blood pressure was abated. This suggests that nitric oxide-mediated inhibition of platelet aggregation and cardio-protective effects are indeed attributed to the conversion of nitrate to nitrite in saliva. Further research by Ahluwalia and colleagues examined the effects of ingesting inorganic nitrates on plasma and saliva nitrite levels in 14 volunteers. The study found that nitrite levels increased significantly 3 hours post-ingestion, indicating the potential for using salivary nitrite as a biomarker for assessing cardiovascular health. Salivary nitrate-nitrite-nitric oxide pathway plays a crucial role in regulating blood pressure. When salivary gland extracts nitrates from blood, these are converted into nitric oxide, which has a direct lowering effect on blood pressure. However, research indicates that individuals with pre-hypertension may be more sensitive to the blood pressure-lowering effects of this pathway. Monitoring salivary nitrite levels can serve as an indicator for total body nitric oxide status. Bioconversion of plant-derived nitrates into salivary nitrite also holds promise as a biomarker. Moreover, saliva has emerged as a valuable diagnostic fluid due to its widespread use in detecting various substances, including illicit drugs and prescription medications. Saliva testing is often preferred over urine testing for rapid diagnosis of alcohol intoxication, with studies demonstrating high sensitivity and specificity. Given article text here are enabling scientists and practitioners to achieve high analyte sensitivity. Biomarker specificity is another consideration with saliva testing, much like it is with blood or urine testing. Many biomarkers are nonspecific (for example, CRP is a nonspecific inflammatory marker), which makes them unable to be used alone to diagnose any particular disease. This issue is currently being addressed by identifying multiple biomarkers that correlate with a disease; these can then be screened simultaneously to create a comprehensive panel of tests that significantly increases diagnostic specificity. Notably, certain types of saliva testing are considered more specific than blood testing, especially for steroid hormones. Since salivary hormone tests only measure those hormones that are not bound to sex hormone-binding globulin (SHBG) or albumin, they reflect only the bioactive ("free") fraction.[90][91] As research into saliva testing continues, accuracy parameters like sensitivity and specificity will continue to improve. Like other diagnostic testing methods, one drawback of saliva testing is the variability that exists among diagnostic devices and laboratory analysis techniques, especially for measuring hormones.[92] Consequently, although a test result may be accurate and reliable within a particular assay method or laboratory, it may not be comparable to a test result obtained using a different method or laboratory. As research in this field continues to validate and refine test methods and establish standard diagnostic ranges for various saliva biomarkers, this issue should be resolved. Recently, the U.S. National Institute of Health and Public Health Service granted significant funding to further advancements in salivary testing, including the continued development of diagnostic standards.[9][93] This text discusses various studies and articles regarding salivary diagnostics, particularly focusing on its potential applications in cancer detection, stress responses, and psychobiological research. The references cite works from the past three centuries, including a book by Blégny published in 1685 to contemporary articles in scientific magazines like Knowable Magazine and Clinical Chemistry. The article discusses various studies related to cortisol and its measurement in different contexts, including health psychology, endocrinology, and sleep medicine. Research has shown that individual differences in salivary cortisol basal levels and diurnal variation can be associated with psychological and behavioral traits. A study found that at-risk adolescents had higher cortisol levels than normally developing adolescents (Klimes-Dougan et al., 2001). Another study explored the determinants of human salivary cortisol responses to challenge, finding that individual differences in stress response are influenced by genetic and environmental factors (Kudielka et al., 2009). The article also discusses the utility of salivary cortisol measurements in diagnosing Cushing's syndrome and adrenal insufficiency. A study found that salivary cortisol levels can be a useful diagnostic tool for these conditions, particularly when combined with other tests (Raff et al., 2009; Sakihara et al., 2010). In addition, the article mentions studies on the measurement of melatonin in humans, which has implications for sleep medicine and pineal physiology (Benloucif et al., 2008; Gavrilova & Lindau, 2009). Furthermore, the article touches on the use of bioidentical hormone therapy and its lack of supportive evidence (Boothby & Doering, 2008). Another study explored the effectiveness of non-hormonal treatments for vasomotor symptoms in women (McBane, 2008). Overall, the studies discussed in this article highlight the importance of cortisol measurement in understanding human physiology and behavior, as well as the need for further research to develop effective diagnostic tools and treatments for related conditions. References: Benloucif S, Burgess HJ, Klerman EB, et al. (2008). Measuring melatonin in humans. Journal of Clinical Sleep Medicine, 4(1), 66-69. Boothby LA, Doering PL (2008). Bioidentical hormone therapy: a panacea that lacks supportive evidence. Current Opinion in Obstetrics and Gynecology, 20(4), 400-407. Gavrilova N, Lindau ST (2009). Salivary sex hormone measurement in a national, population-based study of older adults. Journal of Gerontology: Social Sciences, 64(Suppl 1), i94-i105. Klimes-Dougan B., Hastings P., Granger D., Barbara U., Zahn-Waxler C. (2001). 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Salivary steroids have been extensively studied for their potential use in assessing endocrine activity, particularly in relation to hormone therapy and polycystic ovary syndrome (PCOS). Various research papers have investigated the efficacy of saliva as a medium for measuring sex hormone levels in both menopausal women and individuals with PCOS. The analysis of salivary steroids has provided valuable insights into the intra- and interindividual differences in hormone levels, which can be useful in diagnosing and managing endocrine disorders. One study published in 2007 found that bioidentical hormones for menopausal hormone therapy varied significantly between patients. Another research paper from 2010 evaluated the biochemical markers present in human saliva, with a focus on detecting ovulation. In addition, research has also been conducted to investigate the reliability of salivary testosterone as a screening test for male hypogonadism. Furthermore, studies have explored the role of saliva as a fluid for measuring estriol levels and the development of salivary transcriptomic biomarkers for detecting resectable pancreatic cancer. These findings highlight the importance of saliva as a diagnostic tool in endocrinology and oncology. Research has been conducted on the presence of specific biomarkers and proteins in the saliva of patients with various conditions, including breast cancer. A study published in the Tohoku Journal of Experimental Medicine found that parameters in the saliva of breast cancer patients were altered (Tohoku J Exp Med 214:89–96). Another study by Streckfus et al. identified soluble c-erbB-2 in saliva and serum among women with breast carcinoma, suggesting potential diagnostic applications (Clin Cancer Res 6:2363–70). Furthermore, research has been done on the proteomic identification of salivary transferrin as a biomarker for early detection of oral cancer (Anal Chim Acta 681:41–8). Salivary analysis has also been explored as a means to detect oral cancer biomarkers, with studies indicating potential utility in this area (Br J Cancer 101:1194–8). The use of salivary microRNA as a diagnostic tool for oral cancer detection has also gained attention, with research suggesting that these molecules may hold promise for early diagnosis and monitoring of the disease (Clin Cancer Res 15:5473–7). Additionally, serum circulating human mRNA profiling has been investigated as a means to detect oral cancer, with some studies indicating potential utility in this area (J Clin Oncol 24:1754–60). Research has also explored the use of saliva to detect various conditions beyond cancer. For example, salivary glucose concentration and excretion have been studied in both normal and diabetic subjects (J Biomed Biotechnol 2009:430426). Other studies have examined the presence of specific proteins or biomarkers in saliva, such as chromogranin A in type 2 diabetes patients (Bosn J Basic Med Sci 10:2–8). Furthermore, research has been conducted on the association between salivary lysozyme and C-reactive protein with metabolic syndrome (J Clin Periodontol 37:805–11). The performance of OraQuick ADVANCE Rapid HIV-1/2 Test in a high-risk population attending genitourinary medicine clinics in East London, UK has also been evaluated (Int J STD AIDS 19:665–7). Overall, the research on saliva as a diagnostic tool continues to grow, with various studies exploring its potential applications in detecting and monitoring different conditions. The study evaluated the efficacy of saliva as an alternative to serum for detecting various infectious agents and antibodies. Researchers analyzed data from numerous studies examining the use of saliva in diagnosing conditions such as hepatitis B, A, and C, amebiasis, toxoplasmosis, taeniasis, and helicobacter pylori infections. A total of 15 studies were included in the analysis, which collectively examined over 4,000 patients. The results showed that saliva can be a reliable alternative to serum for detecting antibodies against these infectious agents, with detection rates ranging from 70% to 100%. The study's findings have significant implications for public health and disease diagnosis. Saliva-based diagnostic tests are non-invasive, easy to administer, and may reduce the risk of transmission associated with traditional blood draws. Further research is needed to confirm these results and explore the potential applications of saliva-based diagnostics in various medical settings. PMID 19530953, PMC 2856437 Research has investigated changes in saliva protein composition in patients with periodontal disease and found differences compared to healthy individuals. Another study looked at salivary markers (MMP-8, TIMP-1, ICTP) for advanced periodontitis and found them to be promising indicators. Additionally, studies have explored the role of dietary nitrate in human health. One study developed a one-step assay for detecting C-reactive protein in saliva. Another study examined novel aspects of dietary nitrate and its effects on cardiovascular health. The oral microbiome has been linked to nitric oxide homeostasis, suggesting that the mouth plays a crucial role in regulating nitrate levels. A 2004 review discussed the potential benefits of nitrate for human health, including lowering blood pressure. Research has also investigated the effects of dietary nitrite and nitrate on cardiovascular disease risk factors. One study found that dietary nitrate supplementation can improve exercise tolerance and reduce oxygen consumption during low-intensity exercise. Other studies have explored the translational potential of existing laboratory research on dietary nitrate and its impact on population health. Some have examined the effects of dietary nitrate on blood pressure in healthy individuals, with results suggesting a potential benefit. Overall, these studies highlight the importance of understanding the role of dietary nitrate and saliva protein composition in human health, particularly in relation to periodontal disease and cardiovascular disease risk factors. A study by Macallister et al. (2010) found that inorganic nitrate supplementation can lower blood pressure in humans through the production of nitrite-derived NO. This was further supported by Ghosh et al. (2013), who discovered enhanced vasodilator activity of nitrite in hypertension, highlighting its critical role for erythrocytic xanthine oxidoreductase and translational potential. Kapil et al. (2013) investigated the physiological role of nitrate-reducing oral bacteria in blood pressure control, finding a significant relationship between these bacteria and blood pressure regulation. Another study by Böttcher et al. (2002) examined the levels of total and allergen-specific immunoglobulin A in saliva in relation to the development of allergy in infants up to 2 years of age. A pilot study by Peeters et al. (2011) aimed to find biomarkers for food allergies, specifically focusing on peanut-allergic patients. Vojdani et al. (2003) researched saliva secretory IgA antibodies against molds and mycotoxins in patients exposed to toxigenic fungi. Pink et al. (2009) explored the potential of saliva as a diagnostic medium. Shin et al. (2008) proposed simple diagnostic tests for toxic alcohol intoxications, while Gubała et al. (2002) discussed saliva's alternative use for alcohol determination in the human body. A study by Vindenes et al. (2011) demonstrated oral fluid's viability as an alternative for monitoring drug abuse through liquid chromatography-tandem mass spectrometry. Celec et al. (2009) analyzed salivary sex hormones during the menstrual cycle, providing insights into endocrinological aspects of saliva testing. Recent advancements in measuring active steroid hormone levels have led to the development of standardized hormonal assays for the 21st century. This shift aims to improve diagnostic accuracy and patient care. Innovations in salivary diagnostics have also emerged, driven by nanotechnologies, proteomics, and genomics. The International Conference on Frontiers of Dental and Craniofacial Sciences has played a significant role in advancing this field. OralDNA Labs and OralDNA Innovations in Salivary Diagnostics have made significant contributions to the development of salivary diagnostic tools. These advancements hold great promise for improving patient outcomes in various clinical settings. References: Wartofsky L, Handelsman DJ. (2010). Standardization of hormonal assays for the 21st century. J Clin Endocrinol Metab;95(12):5141-3. Miller CS, Foley JD, Bailey AL, et al. (2010). Current developments in salivary diagnostics. Biomark Med;4(1):171-89. doi:10.217/bmm.09.68 Wong DT. (2006). Salivary diagnostics powered by nanotechnologies, proteomics and genomics. Journal of the American Dental Association;137(3):313-21. Retrieved from "